ITEMS OF INTEREST.

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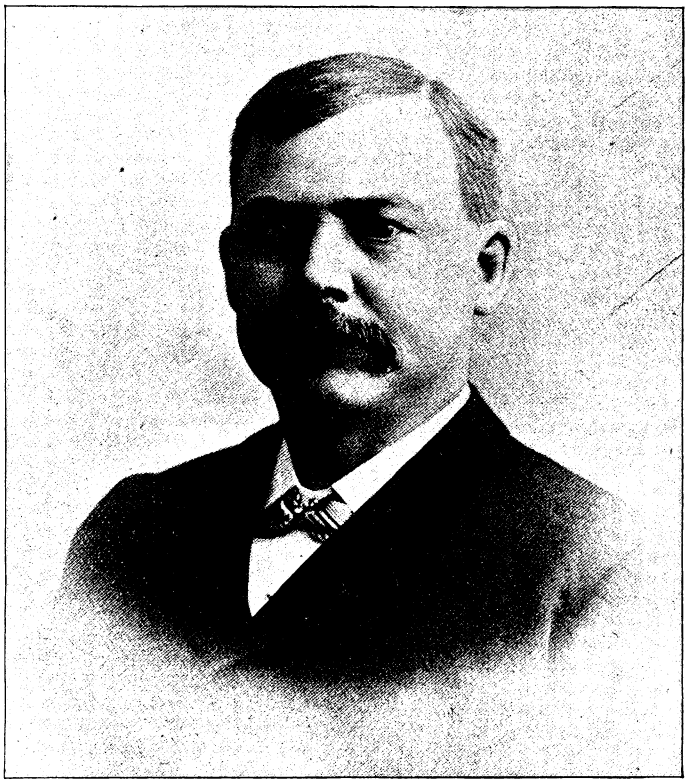

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ITEMS OF INTEREST.

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Thots from the Profession.

Our Food, and How it Affects Mind and Morals.

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CHEMICAL analysis reveals the fact that all things on the earth are composed of about sixty-five elements, and the human system of fourteen of these elements. The laws of chemistry are as positive and fixt as mathematics, and our bodies are composed of oxygen, hydrogen, nitrogen, carbon, phosphorus, calcium, fluorine, sulphur, chlorine, sodium, iron, potassium, magnesia and silicon; and these in definite or fixt proportions or weights. Chemistry also reveals to us how much of each of these simple elements composes every vegetable or mineral, as well as the exact quantity of each in our own bodies; and physiology teaches us how much of each element is needed to develop the muscles, fat, bones and brain.

We also know that no one article of food is sufficient to sustain human life but for a limited period; hence, a mixt diet is preferable as well as necessary; and it is by the intelligent choice and use of food through chemical law that life can be prolonged, and nearly all our woes avoided.

Every breath taken has a specific force to impart blood. Nor is there a food thrown into the stomach without having some of these fourteen elements extracted from it, each going to supply what it needs and calls for and will have when it is presented in the right form for it to grasp. Without a perfect law here, how long could such a delicate apparatus exist? What are these elements? They are the simplest forms in nature, and from which you cannot extract any other principle or quality. It is moreover fixt as law that a definite quantity of each will combine to make a new and entirely different product, as when chlorine and sodium form salt. But for our purposes we want to know what are the elements that compose our body, and the food from which they are taken, and whether they are chemically combined, as in salt, which is nothing like that from which it is made, or merely mechanically mixt as the air we breathe, composed of oxygen and nitrogen.

If air was a chemical mixture, like nitrous oxyd gas, which, to a degree, produces death, we would not have it giving life to the blood, and helping the food which has gone into the stomach, and is finally taken up into the blood, to give us strength and force, and at the same time causing the old particles of the tissues to be thrown off as useless. No! this nitrous oxyd air would go into the blood and pass out through the lungs and skin the same chemical poison like that which first entered the blood. It is the same with alcohol, which was once organized food, as in the grain of wheat or rye, and the carbon, hydrogen and oxygen merely combined, so that the stomach does not have to change them by chemical law, but are gotten at in their simplest form, not taxing the system to convert them into food for muscle, bone and nerve.

Let us look for a few moments to the beautifully simple law by which these elements can be made either food in prolonging life, or poison to produce death

by degrees or instantaneously. How wonderful the law, and yet how necessary to the propagation of animal existence and its prolongation.

We will take but one or two articles which are standards on which we can rely for our nourishment.

A grain of wheat, which is of vast importance, furnishes to the system the greatest number of these elements, and in the best proportion of any other grain, and life can be indefinitely carried on together with water and air, with this, better than any other article of food, under ordinary circumstances, such as latitude and the amount of action to be performed by the individual.

Now this grain of wheat we will divide into three parts, without naming all the other elements in it. These three answer for all our purposes, not only with wheat, but with every article of food of which we may have to speak. Sixty to seventy per cent of that grain is carbon, or the heat and fat-producing element; nitrogen, twelve to fifteen per cent, or muscle makers; phosphates, form one and a half to three per cent, or food for brain, bones and nerves.

These vary in proportion as the grain or article of food is grown in a cold or warm latitude. Take the Indian corn. That grown in the South contains less carbon or heat producing element than that grown in the extreme North. The climate being warm and of greater duration when grown for a series of years in the South, the corn requires less oil or carbon to sustain its life when cold weather comes in that latitude, and of a sequence it cannot impart to our system more of the carbonate than it has taken to itself. Just as we find ourselves eating less fatty food in summer when there is so much external heat. That part of the phosphorus—phosphate of lime—which goes to form bone, is found largely with the nitrates, on the outer side just beneath its flinty covering, and the soluble phosphate, which is food for the nerves and brain for immediate action, is near the centre of the grain. And this arrangement is found in the whole vegetable world.

Let me say just here that these proportions are largely due to the soil on which each is grown. The farmer cannot raise first-class wheat where the phosphates are not part of the soil, or supplied artificially from ground bones and everything containing dead phosphorus. If it was not in the soil, wheat would soon deteriorate, and the land would fail to grow it except as a bastard article.

If we take this same bone phosphate as we place in the ground as food for wheat, which came originally from the soil before vegetable life was instituted in the world's growth, or was placed in it artificially, by man or through the death and decomposition of animal bodies, and in this inorganic form or lifeless state, take it into our stomachs, suppose you that the stomach could digest it and build up the tissues with it? You will better understand this as I proceed.

The disintegration of the Rocky or Mineral Kingdom and its distribution over the face of the earth, and again through vegetable life, became another form of mineral, carbon—pure carbon—in the shape of stone coal, to be in its turn converted into heat or force, giving up its carbon before grown into the vegetable from the original decomposition of that one element alone, carbon, which, through the floods and convulsions on the earth's surface, deposited these elements in such shape in the soil that they could be reached by the vegetable. This inorganic or lifeless mineral in the bosom of the earth which is poison when taken into the body in its purely inorganic state, was made food for the vegetable world before animals appeared, and by which the earth was made habitable. Such was the relation of these fourteen elements when man came, and without which arrangement of Divinity through these thousands of years, man could not have been formed, nor can he at this day live, except in obedience to the same law. Take one element alone, phosphorus. In its original state, before it is taken up by the vegetable, and place the thousandth part of a grain into the stomach and you have

a violent poison; whereas, while it is in the grain, three per cent of the whole mass is not a poison but a food. Why the change by first entering the wheat or vegetable? It was Divinity that shaped it, and we only know that it is true and *that* is enough for us. It is for us to recognize it as a law of God and obey it for our welfare, spiritual and physical.

Without further explanation I think you must understand the difference between inorganic and organic life. They are life in both forms, because of the inherent force in the original element. It is a beautiful exemplification that life is death. Physical, moral and spiritual are amenable to the law of force, as death or decomposition, or disintegration must take place before organic life can be.

If it is necessary for the perfect cultivation of the soil and the growth of vegetable life that we should analyze the soil that we may know if any elements are missing and needed by the grain; and that the grain be analyzed as well as the compost or earth food for its growth, how much more so for us to act as intelligent beings and regard, not instinct merely, but the laws which are so simple when explained in the light of science.

We are thus composed of fourteen of these sixty-five elements; and one or more of these fourteen compose the food and drink necessary for life; each of these elements in its original state is a poison, and is termed inorganic; and in this state is food for vegetable life only. The elements cannot be appropriated or used by the animal till they have been vitalized by the vegetable; by the decomposition of the vegetable, these elements are returned to the earth in their elemental condition.

This change takes place in the life of the vegetable, and every moment there is not only death occurring in every part, but a renewal of life.

The same may be said of the animal body. Death and life are interwoven, and without the former life cannot go on.

What is life to the vegetable world is death to the animal kingdom.

No article of food will sustain life. There must be a mixt diet to meet the requirements of each under all the varied circumstances of man's active life in all latitudes and vocations.

We cannot extract one of these elements from our food, as in the case of white flour, where the phosphates are bolted out, without injury to ourselves, unless made up by food containing a greater quantity of phosphates.

It is far better to eat all foods as nearly in their original state—that is, with the elements in the proportion as arranged by nature.

To be healthy, it must be recognized as a fact that what is meat for one is poison to another. That is, a diet for a laboring man would not sustain one engaged in sedentary intellectual labor.

The element that makes muscle will not be converted into bone; nor can the carbons which make fat ever be changed to nerve material or food. Each have their specific food and must have it or that department will become inactive and finally die.

And we may take the proper amount and kind of food for the muscles, yet their activity can only come through a proper and full supply of phosphates.

Air and light play an important part in the conversion of food into life-giving forces.

Let us now make the practical or philosophical application to every day life. What to eat, when to eat and how to eat. What to drink, when to drink and how to drink.

Bread and water are the two articles most needed.

Wheat, the world over, meets the greatest requirements of the grains. Of all foods there are none to fill its place. Aside from its nutritious and life-giving qualities, it *has another value* but little understood and on which I would like to dwell for a

whole lecture : its mechanical presence in the mouth in mastication and af erward in the stomach.

This forces us to speak of the stomach and its function or action.

To have the stomach digest properly it must have bulk as well as quality. If food required only the gastric juice and saliva to dissolve it and prepare it for the blood, then a stomach of very small dimensions only would be needed ; and food could be in a concentrated form as is cheese and oil. But it must have more. Without a capacity for a large quantity, say a quart, there could not be food enough gotten into it at any time, to support life. The stomach would ever be at work, and no time allowed it to accumulate the gastric juice. Besides, it takes from one to five hours for some articles to digest, and if food is taken into the stomach on half digested food, which would have to be if the stomach was small, digestion would never be completed.

Take the lower animals as illustrations. The ox, that lives principally on grass, has to eat an immense quantity of that food to get a few ounces of life-giving force, hence the stomach must be capacious, and to keep it on concentrated food, is death. As you rise in the scale of animal life, you find the stomach getting smaller, as more concentrated food is used. If a man were to use cheese exclusively, his stomach would be reduced in size till it would have no muscular function, and hence die of inactivity, or it would soon have no power, for having nothing on which it could exert its muscular strength it would fail ; just as the human arm would lose its power of lifting weights if not constantly accustomed to it. And if we would increase the powers of the stomach we must treat it on the same principle of law that we would the rest of the muscular system to increase its strength, by giving it something to lift or digest and such articles in quantity and quality that are *hard* to digest. If we place into it food easily digested we will soon have it fail to digest even that, and have to resort to something still easier of digestion. If we would have our stomach a giant we must give it hard work as well as easy work.

No ! for us to be able to lift one hundred pounds, we must exercise by degrees, and lift first a small weight and then an additional five pounds daily, till the maximum is reached. So with the stomach. For instance ; cheese is looked on as a very indigestible food, and so it is, but it is nearly pure food, and sixty per cent of it nutritious material. It is very concentrated, and it will not do to eat much of it. How can the stomach be made to digest it ? Here comes in the use of bread for bulk and mechanical presence.

Eat cheese alone, and you would soon sicken on it before your stomach would be satisfied of the bulk needed by it. You cannot eat much of it any more than you could of sugar, another concentrated article. The stomach must have bulk or something on which its muscular walls can grapple and tumble it over and over, mixing the juices of the stomach with the contents, dividing its particles into finer ones by rubbing together, so that millions of surfaces are presented instead of a few.

Bread comes in to fill the requirements. How ? I told you cheese was not really indigestible, but in its concentrated form the stomach could not get hold of it. While it was milk it was easily digested, because divided into millions of fine particles, and the muscles were exercised, so that the gastric fluids could come in contact with every particle.

How necessary then is bread, (unbolted flour bread) not only for its nutritive qualities, but also for its mechanical presence. Whether the food you are eating be moist or dry, bread should be taken at the same time for bulk to help the muscles of the *mouth* to perform perfect mastication.

The mouth is only another stomach (a first stomach we will call it), and the saliva thrown into it from the many glands therein and around, is as necessary for

perfect digestion as the gastric juice. To thoroughly masticate a succulent or juicy vegetable, and comminute or grind it between the teeth and mix with it the saliva, we must use something like bread to absorb the juices and give bulk, so that between the action of the tongue and the cheeks and the lips, the food can be kept between them for the teeth to grind. If too wet, it is swallowed without mastication, and compels the stomach to do more than double duty. The *bread* performs a function or action there the same as in the stomach. If the food is not comparatively dry, it is impossible for the muscles of the mouth to grasp it, nor can the saliva become thoroughly mixt with it. No water or fluid of any kind should be allowed to enter the mouth while eating. It is against all law, and no animal except man ever does it, unless taught by civilization.

It is the most important principle in the propagation of life through food. The more I study the character of bread alone, the more cause I have to admire the laws of our being, and the less complex they seem.

We have the same thing beautifully illustrated in that *very elegant* dish of pork and cabbage. The cabbage acts the part of bread. The oil or fat or carbon from the meat is boiled into every fibre of it. It is so divided or distributed over a vast surface, that when it goes into the stomach a person is not depressed or sickened by concentrated fat, and bulk is given which increases the muscular powers of the stomach and enables it to lift heavier weights every day.

If the same amount of fat had been taken alone, unless called for by the stomach of a laboring man exposed to the cold, it would nauseate, and the want of bulk would render the stomach less able to digest other foods. But in mid-summer it would not do so well. It is a dish for the winter. But little fat should be boiled with cabbage in hot countries, as the solar heat supplies the body, and where fatty food is taken in hot climates, fevers of the worst grade occur. Inflammation always runs higher and is more destrucrive, and harder to control.

Go north, however, and you will find that the Esquimaux will eat in the course of twelve hours, a gallon of whale oil and a dozen tallow candles. It is compulsory with them, that the heat of the body *must be sustained.* The fats consumed are enormous, but it is only in proportion to the needs of the inhabitants of northern regions. You could not get enough of vegetables alone into their small stomachs to keep up the heat.

In the tropics it is just the reverse, succulent food and acid fruits with lean meats.

Those living between these two extremes of latitude have to conform to the same law, and in each latitude grows or lives the food best calculated for that district.

By this time you must perceive that there is some law of eating and drinking, and that we cannot do as we please.

The kind of diet for an out-door laborer who is only using his muscles and consuming the heat of his body and not much work for his brains, will not do for one engaged in-doors in intellectual labor. For the former, fat meat, corn bread, greasy food, everything swimming in grease would only keep *him* in good trim. From the extra muscular action given his stomach it would be marvelous for him to have dyspepsia. The extra exertion brings into the lungs a greater volume of air, and more rapidly, thereby aiding the old particles, used up in muscular action to leave the blood, and helping the new food for the tissues to undergo more thorough change. Such a man could not have consumption except by extreme vicissitudes and exposures.

The literary man living thus would soon have neither mind to labor nor capacity nor disposition to do so. He wants the best beef steak, unbolted flour bread, fish, potatoes (baked), to give volume like bread, and for heating purposes. Not fats ! He has artificial heat all around him ; besides, he is not breathing so fast as

the laborer, hence does not need fat to keep up respiration. He must have the phosphates more largely, with nitrates for muscle.

The person who will eat a greasy meal and sit down in a chair in the heated house and perform no active service will soon be a hog in laziness and fat, or the stomach revolts; and, if kept up, dyspepsia or indigestion results, for the stomach is overpowered and the circulation is brimming full of fats which are of no use, and the liver and lungs particularly are overcharged in eliminating *them* from the blood. The revolt soon becomes general and it takes but a little puff of wind to produce pleurisy, consumption, and disease.

What has all this to do with the moral and spiritual nature in making men good or bad?

This is done in three ways.

First.—The brain is the seat of mental action, and morality and spirituality can only come *from* a brain, and one that has had proper food to make it a healthy organization, so that it can act well and evenly. Unless that brain can have a constant supply of mental and physical food it soon becomes unbalanced, and we cannot control our own actions, because they solely emanate from his weakened brain and will power.

Secondly.—Any one who has not the moral courage to control his appetite at table and live in consonance with his being, will not control his moral and spiritual actions in the form of temptation.

Thirdly.—When the *common* appetite has never been controlled the stomach loses its powers or functions, and consequently flags under the heavy loads imposed, and calls for help. What sort of help does it get? Condiments.—Pepper, mustard, salt, vinegar, pickles, and every spice known, are added in greater quantities as the stomach grows more feeble. Thus, tobacco now has its start. The nerves must be soothed and hushed so that the cries of the stomach cannot be heard. *And this* is soon found *not strong* enough, and *alcohol* must of necessity be poured in to lull the jaded stomach, and the quantity is increased till there is nothing left of that real soul of the body--the stomach.

This final act all comes of not dealing fairly with the stomach. The man who will cheat his stomach and enslave it, will cheat his neighbor the very first chance he gets, and will not serve his God.

The condiments have a poisonous influence on the passions. They add nothing to build up health tissue and strengthen the brain and will power; they inflame the blood and weaken every organ of the system, particularly the stomach and brain, which soon have less capacity for healthy action, but less powers of resistance, making the man an easy prey to his animal nature in just ratio to the weakening of the stomach and brain.

Tell me then that what we eat and how we eat has nothing to do with our moral actions?

It is not necessary to make a habit of fasting at stated, periods unless the system has been glutted for many months till it can hold out no longer. Then, as a necessity for the body, fasting must be endured or we die. But such fasting is of no spiritual use unless a return is made to a philosophical or rational mode of living kept up as a habit.

The *point is to be master of your common appetites at all times and under the most trivial as well as* the most trying circumstances. Be ever on the alert that there shall be but one master, and that *your will.* As you master these little details of life you conquer the larger in the aggregate without special effort.

I say then, unless we do recognize the importance which I attach to this system of eating and obey it, we become morally and spiritually weak in proportion. You cannot serve God and unman your stomach.

Aside from every other consideration it gives us splendid discipline. Just as in

the army. Does the commanding officer wait to drill his men in all the minutia of scientific military life till the eve of battle? No! The *discipline* is what he must have which comes of action, action, action! Every moment, day by day, are they drilling, and all for *discipline* when on trial. It becomes a part of every soldier's nature so often is it repeated. So with us in preparing our bodies for any emergency. And, in so doing, of necessity we have born and tutored in us that grand *morale* which is the great stimulus to the soldier in action and to one who has kept his stomach well disciplined by daily drill. Neither morality nor spirituality grows by chance nor is it direct from the Diety. It is an element of our nature that must be cultivated, and it grows by what it feeds on.

There is scarcely a passage in the Bible but tells to *do* thus and so; not look to the Lord for everything; for the Maker found out very soon that it would not do to give man too much assistance. It does not do to prop a *young tree.* Give it sunlight, earth containing its food, and sufficient exposure to the raging winds, and if it has the true grit within, it will support itself.

By this, I understand, we are *free* agents not only in the physical world but in the moral world; and the sooner we recognize it the more *scientifically* will Christianity be prosecuted and practiced. The law of development and progress from one state to another holds good here. The origin of life comes from a single cell. So does our moral bodies, and no one was ever made a full grown Christian at one stroke of conviction except by special miracle.

Do not mistake my meaning and think I would have you believe God takes no cognizance of our actions, and gives no warning voice directing us in the right way. No! No! If any one has reason to feel and know that a spiritual hand has directed his ways, it is the writer.

Nor would I have you look on me as the highest type of physical and moral development, tho I have endeavored through thirty years to rigidly carry out what I preach. We are not all constituted alike, physically, mentally nor morally. With *all* this philosophical and physiological training I could never become a large muscular man; neither could I become fat, except I violate this common sense law and eat more fat than my peculiar organization calls for, and at the expense of my mental or nervous system which predominates. Nor could I become the highest type Christian any more than I could a first-class artist unless I have the genius for each. But with God, the one talent of moral nature improved, and not thrown away, reaps a high reward. If there be a silver lining on the cloud that Christians think is darkening their sky, it is that *science* is pushing its way into Christianity and is laying out a law which will eventuate the grand problem that we can become more appreciative Christians and better ones by understanding law. To my mind there is nothing more grand in its way, and it can be worked out as surely as a problem in mathematics; and the spectacle of a man thus possessing his own soul and helping to work out his own destiny, is surely more in keeping with God's wishes and designs than if God had to do it all for him.

Let us not then fear the truth, nor be unwilling to take the responsibility of standing alone on our physical and moral nature, nor refuse to be disciplined by its laws, but recognize that full growth and manhood in the moral as well as physical can only come slowly and gradually of force rightly developed and applied.

In conclusion then let me give you *one* practical illustration of the origin of that great curse and scourge and its cure—Intemperance in alcoholic beverages—as very apropos to the subject. The study of this question from my own personal standpoint assures me that the habit is first engendered at the dinner table, not directly, but indirectly, from the custom of not eating philosophically or rationally. The habit of not making choice of appropriate food for our particular vocations; the haste in masticating; the use of fluids to wash down what has not been masticated; the too great fluidity of the food in the stomach. Eating too

often and late will gradually destroy the functions of the stomach and have it calling for stimulants to spur it up to increased action. Step by step condiments stronger and stronger are used till tobacco and finally alcohol is not stimulating enough to keep the poor overworked stomach up to the standard, and all fail to do it. It is not only the stomach that is overmastered, but the will-power or *morale* is in abeyance and powerless to reclaim the drunkard. What will reclaim and hold him? I say no power will keep him unless he changes his course of living at the table. If the vicious modes of eating and drinking the ordinary foods are continued by the converted drunkard, there is no hope for him. And till the advocates of temperance recognize these plain facts, thousands of drunkards will continue to be made, the foundation of which is laid in childhood, and you can only eradicate it as a disease by returning to a rational course of living at the table that no stimulants will be longed for. All the pledges in the universe will not hold a drunkard who has for years previous to commencing to drink had no control of his appetite at the table.

Then let us commence at the right place and educate ourselves and our children, by force if necessary, from infancy up, that the system may be kept in a normal or healthy action in all its departments, and if the principles are practically illustrated by the parent doing the same thing before the child is asked to do it, we need not have much uneasiness as to the morals of that child who has obeyed. Napoleon said that victory was on the side that had the heaviest artillery. I say that the child that can be raised till the twentieth year on this plan, so as to keep the stomach strong, will have no desire for condiments, tobacco and alcohol, and will be the conqueror because he has the strongest or heaviest stomach. Neglect to so train children is the fundamental cause of drunkenness, and from which springs much of the immorality and vice that are manifest.

How to be Well and Miserable.

FIGURATIVELY speaking, most of us appear to be a very tall tree, and sewer-gas and disease-germs are sitting around the foot of it howling and trying to climb up and get at us.

We may sit down to our breakfast, but the food is adulterated and we don't eat the right kind.

We go to our offices, but the air isn't fit to breathe and the silver quarter we get in making change after luncheon has typhoid fever germs on it.

We lie down to sleep at night, but the room isn't properly ventilated and the electric currents don't go right.

And all over our daily life, when we eat, walk, play, sleep, while we stay at home and while we travel, hangs the dread monster, sewer-gas. Sewer-gas has been known to chase a strong, healthy man all the way through Harlem and half across Westchester County, gaining on him at every jump.

These various enemies of the human race will also co-operate to a surprising extent. It has been shown by recent elaborate experiments carried on by Dr. Foogay, of Boston, that malaria will frequently get hold of a man and hang on till sewer-gas comes up and finishes him.

Dr. Foogay has also shown that there is nothing safe in this world except bran pudding and a vacuum, and he is preparing an indictment against the vacuum.

Personally, I have always tried to live the way these theoretical gentlemen advised in most things. Take, for instance, the movement of the electric currents. This is something you do not hear about as often as sewer-gas and microbes, but when you do see an article on the subject it is deep. Several years ago I read a paper by Prof. Crazybone, in which he showed that you should sleep with your head toward the north, so that the electric currents on their way to the North Pole would pass through the body the right way. The plan looked reasonable and I adjusted

my bed to meet its requirements. A few years after I ran across an equally scholarly article by Dr. Allhead, in which he proved that the electric current shouldn't pass from the feet to the head, but from the head to the feet, and, therefore, we should all sleep with our heads toward the south. I turned my bed. Now, at this late date, there comes an elaborate report of recent investigations by Profs. Dry and Sear, in which it is shown that the electric currents are bad for the body; however, they pass through, and the minimum of danger is found in sleeping with the head toward the east or the west. I have again wearily turned my bed. Perhaps after a while it will get so I can get up in the night and change its position. If any man will show me a bed hung on a pivot, I will buy it. I am quietly working on a bedstead myself which can be wound up like a clock and will revolve all night and will occasionally get up on its hind casters and prance about the room and turn a few handsprings.

Remember everything depends on what you do not eat. Dr. Husks, of Philadelphia, has made the food question a life study, and you cannot do better than follow his advice. In the first place, you must not eat meat in any form.

Meat is not a natural food of man. The man who eats meat is weak; the man who makes a diet of vegetables is strong. This is illustrated, Dr. Husks has ably pointed out, even in the animal kingdom; the stronger and more robust animals feed on vegetables, while the weaker and less active are meat-eaters.

To show the force of this it will only be necessary to call your attention to the weak and nervous lion and the powerful and aggressive lamb, the debilitated tiger and the hearty hen.

You will, unfortunately, have to drink something. Dr. Husks cannot for an instant consider anything but water. Tea and coffee are dangerous. We can learn much as to what to eat and drink from a study of the lower animals, whose tastes and instincts have not been corrupted as have man's. The cow does not drink tea, nor, for that matter, coffee either. If man were not enfeebled by generations of coffee and tea drinking, he might be as large and strong as a cow.

Nothing but water should be drank for breakfast, nor, indeed, for other meals; and it should be as near as possible at a temperature of 98 degrees, so as to avoid cracking the enamel of the teeth or injuring the linings of the stomach. As many of the disease germs as possible should be removed from the water before using, by boiling, and, if possible, distilling. Even then you will swallow a large number of germs every time you drink. You should, of course, have a filter. In a recent paper Dr. Wachem strongly recommends Dr. Snachem's filter, and during the course of an address delivered the other day by Dr. Snachem he spoke very highly of Dr. Wachem's filter. Dr. Searchparty, who has a patent ventilator to sell, speaks highly of both filters. Probably you had better get both. The cow does not use a filter, but cows are not men.

Rise from the table promptly at 7.30, with a slight feeling of hunger. You will thus know that you have not eaten too much. No matter if the third dish of bran does look tempting, do not weakly yield. For an hour after breakfast indulge in light and humorous conversation.

After the hour of light and vivacious conversation you may walk about for thirty minutes taking care to keep your shoulders well back and to breathe twenty or thirty times a minute.

After this begin the business of the day—attempting to exclude sewer-gas from your nose. A light luncheon of wheat and oats may be taken at 1 o'clock, and dinner of wheat, oats and Indian corn served at 6 o'clock. Go slow on these things. Be in bed at 8 o'clock and immediately fall asleep.

Do not dream—Drs. Lasthope and De Spare's experiments show that dreams are injurious to the general health.

Breathe as little as possible on account of the sewer-gas.—*New York Tribune.*

The Post Graduate School of Prosthetic Dentistry.

DURING a brief sojourn in Chicago recently, we had the pleasure of visiting school and were exceedingly gratified to note its success and the practical methods of instruction which are followed in imparting knowledge to its pupils. The first thing taught is system and order; instruments and all apparatus must be in good condition for the uses they are to be put to. The laboratory room is furnished with all modern appliances of utility; the lathes are run by an electric motor; furnaces for continuous gum work are in place, and facilities for every other kind of work done by the dentist are at hand so that the student on entering wastes no time in preliminaries, but is immediately put to work, materials and tools in hand. The president of the institution, Dr. Haskell, is known throughout the dental world as one of the ablest mechanical operators in the profession. His ability to impart instruction is no less than his ability to perform, and his heart is so in the work of this school and his personal supervision so earnest, that no one possessing ordinary talent can fail to bring themselves to a considerable degree of perfection under his teaching. There are other advantages of vast benefit to be derived from a course in this school. In the museum is a collection of hundreds of casts on which practical dentures have been made, showing every variety of deviation imaginable from the normal mouth, the difficulties of successful adaptation, and the methods of overcoming them. In connection with the school, cases are received from dentists over the country which are made for them, thus assuring them of skilful and artistic dentures. This also furnishes the student a vast opportunity for observation and comparison. While this school is mainly for the benefit of young men just entering the profession, yet it is available to any practitioner who may desire to brush the cobwebs of routine from before his eyes and learn the more recent methods of practice and manipulation. It is a lamentable fact, but a fact it is, that for the past twenty-five years, indeed, from the introduction of rubber as a material for the mounting of artificial teeth, prosthetic dentistry has been neglected by the abler men of the profession till it has become almost a lost art, and those old masters of the art who were not ashamed to be called mechanical dentists have nearly all crossed over the ferry; but within the last few years, since "bridge" and "crown" have become the fashion, the profession seems to have taken a renewed interest in prosthetic dentistry and a revival has set in which may restore it to its past usefulness, and afford the toothless unfortunates an opportunity to secure dental substitutes that will beautify and naturalize their countenance, instead of changing their expression into that of a grinning skull. To this end such institutions as that founded by Dr. Haskell and his colleagues should be established at all points where they could be sustained, especially where dental colleges are located, thus giving students additional advantages.—*W. T. in Dental Register.*

Dental Fees.[1]

DR. WM. H. ATKINSON.

THE advocates of low fees are, without exception, poor operators, while the merely elevated standard of fees, irrespective of the character of the work, is simply a mean dodge to get something for little of nothing.

All difficult labor is necessarily capable of commanding higher compensation for the time spent. If we are to judge of the value of work by the good effected, and graduate the pay accordingly, there is no calling that ought to pay as well as *faithful dental service.*

You may *talk* of good fillings and good dentures being produced for but little

1 This article was written 28 years ago. This shows how, even then, we could reflect the best thoughts of the present time.—ED ITEMS.

more than the materials which enter into them ; but it will never have any good effect on any one further than to teach him by bitter experience that he was very unfortunate in being so unjust and unreasonable as to hope to get a service really worth fifty dollars for ten or fifteen, or twenty.

Were there no dishonesty in buyers, there would soon be no dishonest sellers. In just so far as the wicked huckster's rule of "buying low and selling high" is esteemed safe policy, even money-wise, irrespective of the death-damp it strikes to the soul morally, and is adopted, there is but the one idea of getting all that can be had out of the patron for that time.

This is the sin of advertising dentists, doctors, etc. The great wonder is, among intelligent people, how it is that dupes are still to be found. I have already indicated the cause to be an ingrain disposition in the majority to be served at the lowest possible figure, which unfits them to judge of the quality of the service or article desired, and makes a market for low-priced and necessarily inferior goods or service, by stimulating its own likeness in the meaner grades of physicians, lawyers, preachers, surgeons and dentists, who unblushingly assume to do impossible feats in supplying the various needs of the people for an occasional crust of recognition, a free dinner, or a cash fee so low as to make the sheerest miser acknowledge it to be "cheap."

Much is usually said about "fair prices" by those discussing this subject. He who is bidding for patronage in the way esteemed cunning by him, will prate of "fairness" of price, and the lack of high-toned professional character in his brethren who are in receipt of larger fees, never for a moment taking thought that it was possible to have even rich people bear false witness as to what had occurred in their experience with another member of the profession.

Small men, alas ! abound in all professions ; but the very smallest of all is he who condemns his fellow unheard, and consigns him to the plutonic regions on the insinuations of interested witnesses in an ex parte hearing.

I hold opinions derived from long, earnest and honest investigations to be worth more than hasty squibs. I also hold that, other things being equal, young professionals, as well as other workers, ought to be willing to work for smaller fees than would be satisfactory to them in more advanced years ; but I do not mean thereby to affirm that he who has spent three or four years pupilage, and attended two full courses of lectures, and thereby fitted himself to do his work up to the advanced standard of service, which enables him to pack twice the gold into a given space that was formerly deemed possible, shall therefore graduate his fees by an obsolete standard.

A professional man's education and skill is his capital, just as the land and ability to cultivate it is the capital of the farmer. And he will be, like him, very much influenced by the sort of neighbors he has. One really intelligent, thrifty farmer in a neighborhood will soon stimulate nearly all his neighbors to emulate his example in producing good quality and great quantity from a given number of acres. And as good quality demands the best prices, there is a double advantage in having quantity and quality depend on the same sort and degree of culture. Fortunately this is the result in all intelligent practice and procedure.

But he who gets the reputation for selling for more than his neighbors the same or an inferior quality will soon be avoided by his patrons, and run to ruin rapidly, unless he sees his error in time and corrects it, which is a rare occurrence.

There is no economy in buying inferior food or clothing because it is low priced ; for low, deteriorated, coarse food engenders disease, involving the loss of valuable time and extensive cures. So poor professional service is dear at the taking, even if it were attainable free of cost other than the time occupied in its performance ; for many reasons, among which is the security we fancy it confers, lulling our vigilance till too late to retrace our steps and have the work well and

efficiently done. We then wake to the consciousness of our fatal error in having allowed ourselves to be deprived of the advantages in reach of all who are fortunate enough to be honest to the *core* at the start; neither willing to dupe or be duped, as all are who expect to receive clean cash or clean service without a just equivalent.

Be assured, all misapprehensions besides are less destructive than that we can unsettle the balance of justice, and not be found out sooner or later (and the sooner the better for all offenders).

How shall the amount of fees be decided, and by whom? Answer 1. Under the law of contracts, and should be decided accordingly. Answer 2. By the operator and the patient. Dare any one not cognizant of the work assume to dictate the equivalent without knowing what is in either side of the scale? The greatest disturber of equivalency of compensation is the almost universal acknowledgment, distinctly and directly, or indirectly and tacitly, that it is possible so to classify and codify a schedule of operations, and what shall be a just return therefor, as to write it out for the government of all concerned.

If conditions were not ever varying under which dental service is rendered, an approximation to rule might be hoped for; but so multifarious are the conditions of both patient and operator that this is now absolutely impossible. It savors of the folly of a physician's agreement to faithfully attend for one year a community of persons for a stipulated price. And even this folly has been committed. How much less, then, should our surprise be that many dental and medical societies have enacted the farce of publishing a list of fees for specified services!

Let each member of a profession start honestly and intelligently; and tho he may at times make crooked paths, in consequence of the pressure of poverty and the influences of quackery, by which the whole land is affected, yet if he maintains his integrity he will emerge into light, clear, humanizing, divinizing, and all-pervading, as the final result.

One of the most conscientious and consistent young men I ever knew, after being humbugged, in a four weeks' pupilage with an arrant pseudo teacher of dentistry, could not get his own consent to charge more than fifty cents for filling small cavities with gold; yet, strange as inconsistent, he filled hundreds of small cavities in front teeth for his church brethren and sisters with that most execrable form of amalgam fillings, viz., the Crawcour formula, as known in 1838, for which his conscience permitted him to pocket from fifty cents to one dollar each!

This notable peregrinated over the country with his pockets well supplied with glowing accounts of his skill, signed principally by clergy of his own order, doctors, lawyers, merchants, etc., till December, 1842, finds a card in his window, informing his patrons that "Dr. —— has no time to parley about prices—smallest gold fillings three dollars."

Taking this case as a type of the best sort of conscientious practice, it is easy to calculate that growth in knowledge and skill brings corresponding progress in price, and recognition follows, provided always you are not unwilling to grow out of past littleness, ignorance, and lack of skill.

I am acquainted with some of our most skilful dentists, who are now demanding and receiving the highest prices, who well recollect the time when they would have deemed their lowest present prices as intolerably extortionate and unjust; but now, with perfectly peaceful conscience, blandly assert that they have given more than an equivalent in even the least difficult cases. Now is this searing of conscience, or actual growth in knowledge and ability faithfully and efficiently to serve those who seek their assistance? The latter, wholly and clearly, I am happy to believe.

If any one desires to operate for less recompense than another, all I ask of him is to do as he would that others should do to him, only requiring that each effort be of the best possible stamp under the circumstances.—*Cosmos.*

Post-Graduate Schools.

DR. W. H. ATKINSON, NEW YORK.

THE inadequacy of college instruction to meet all the demands of practice is shown in the increasing number of post-graduate schools. Were the collegiate courses sufficient to prepare teachers—as *doctor* signifies—post-graduate courses would be unnecessary. When so great diversity of method and fact is taught, the courses might be greatly helped through frequent interchange of methods and discussions of principles by the associated college faculties. A more uniform curriculum would be encouraged, and students would reap the advantage of all opportunities, discoveries, and late methods. Instruction as now given is too often personal with the professor, and a strife to uphold a theory and gain adherents, rather than a clean effort to advance the quality of instruction, whatever the source of improvement. Lecturers, if untrammeled by warnings against statements antagonistic to the teachings of the faculty, would introduce an element of diversity and novelty.

College instruction falls short in practicalizing what is taught, more especially in preventive dentistry, diagnosis of surgical aspects, and operative surgery. What is needed is *better* dentists, rather than *more* of them. Not dentistry alone, but all the professions are crowded with partially educated holders of degrees.

The ideal post-graduate school is a society holding frequent meetings and clinics. In a paper read by the chairman of Section II at Boston in June last it was suggested that the colleges might be made State institutions, thus relieving the chairs of pressure to increase the fees by taking as many students as possible. Three needs are advanced: First, a dental college association to which all faculties belong, meeting at least twice a year with the purpose of harmonizing educational effort with the best old and new attainment. Second, extension of studentship to full three years' infirmary practice, rigidly supervised, with six months' lectures in each, and exhaustive yearly examinations covering the course. Special boards of examiners would be an improvement. Third, dental unions holding monthly or more frequent meetings, maintaining infirmaries where complete facilities for clinics would always be at hand, under the management of efficient men, should supply every need of a post-graduate school in a better way.

A journal published by these unions, covering their transactions, would be immensely valuable. The clinic reports, properly illustrated, could be made an especially useful feature, and thus would arise an "independent journal" whose pages would invite contributions outside of the unions. Very little consultation could amalgamate several societies into a district society or union, and these could combine into a federation, ready to grow to international importance. Then a dental congress could be held, with all the machinery to make it a success, whereas now it is of doubtful expediency.

In this connection, the query arises, Would not a new school of advanced capacity be competent to graduate an M. D. D. S.—Doctor of Medicine and Dental Surgery—and thus lay the ghost of "dentistry a specialty of medicine," by recognizing in the diploma what medical knowledge is expected of us?—*Cosmos.*

Is Atmospheric Pressure a Myth?

IN the ITEMS OF INTEREST for September, Dr. C. H. Land, in an article on "The Scientific Adaptation of Artificial Dentures," declares that we are all mistaken supposing that artificial dentures are supported in the mouths of our patients by in atmospheric pressure, and pronounces the term "Atmospheric Denture" a misnomer, a delusion and a snare.

The first paragraph in the article referred to is this: "In the adjustment of full sets of teeth to the dental arch we should recognize that the main dependence for support is due directly to the adhesion of the saliva."

In further illustration of this idea the doctor cites the old experiment of lifting a stone by a piece of wet leather pressed carefully over it, but he does not say in this case that it is the adhesiveness of the water that enables us to lift the stone, yet we are left to infer as much; in no other way could he consider it a good illustration of his idea of dental plates supported by the adhesion of the saliva.

The statement that two surfaces brought into *absolute* contact at every point will be held together with a force of fifteen pounds to the square inch, is accepted as an established fact.

This is caused by atmospheric pressure or the weight of a column of air one inch square. This pressure varies with the depth of the column; at the level of the sea it is fifteen pounds to the square inch, as we rise from that level it decreases in regular porportion to the hight ascended. In this way, by the aid of the barometer, the æronaut measures his distance from the earth when sailing among the clouds.

The only difficulty in availing ourselves of the full force of this principle in sustaining artificial dentures, or for other purposes, is found in not perfectly excluding the air from between the surfaces in contact.

A piece of dry leather cannot be pressed on the surface of a stone so closely as to exclude the air, but when the leather is wet and softened, and just enough moisture is left to fill the pores and exclude the air, a stone of considerable weight may be lifted by a string attached to the centre of the leather.

It may be asked how do we know it is atmospheric pressure and not the adhesiveness of the water that maintains this contact between the leather and the stone. To one who is in doubt, we would suggest this experiment.

Hang the stone and leather, as joined, in the receiver of an air pump, exhaust the air as perfectly as possible, if the stone remains attached to the leather, it will prove that Dr. Land is right, but if the stone falls when the air pressure is removed the proof is absolute that atmospheric pressure is the force producing the effect.

Dentists well know that, from various causes, unnecessary to enumerate here, he does not secure and maintain a perfect fit to the mouth, and various devices have been resorted to compensate for this inaccuracy.

Air-chambers or vacuum-plates, as designed by Dr. C. H. Land and others, are merely substitutes for perfectly fitting plates. Still acting on this belief that atmospheric pressure is the force we must rely on, and knowing that if the air can be perfectly excluded from even a small area the plate will be retained, the air chamber, so-called, is formed, and patients do learn to exhaust the air from it to a variable degree, and it is not uncommon to find plates almost wholly depending on this for support when there has been considerable absorption of the maxillary ridge.

That moderately deep mouths with somewhat prominent ridges retain the plates better than the extremely flat ones is true, as the force to remove them is directly downward and against the sustaining pressure. In very flat mouths there is but little to prevent a sliding or lateral motion which would be effected much easier.

If we had a great weight to move we should find it much easier to slide it over a wet surface than to lift it.

Dr. Land remarks that the tissues of the mouth are drawn into the vacuum so that it soon becomes useless. This is true, and in connection with this fact there are two things to be considered; first, that it is the pressure of the air that forces the tissue into the chamber, thereby proving that a vacuum has been established, and second, that by the time the tissues are forced into the vacuum the plate has settled to the mouth and there is a better fit over the whole surface, and the vacuum is no longer needed. This will not occur unless sufficient time has been allowed for absorption before the impression is taken.

When we are able to make perfectly fitting plates, vacuum chambers will not be necessary, and I think we will still have to rely on atmospheric pressure rather than the adhesiveness of saliva. NEMO in *Dental Review.*

Diseases of the Peridental Membrane, Beginning at the Margin of the Gum.

DR. E. J. PERRY, CHICAGO.

THE importance of a thorough knowledge and a proper appreciation of the consequences of the diseases indicated in our subject can scarcely be overstated. We can no longer close our eyes to the fact that these diseases in some form are responsible for the loss of as many teeth as caries in all its forms. Our older text books have little to say of them, and no classification was attempted till recently. The best practitioners of a decade ago regarded cleaning the teeth of tartar as menial. I remember almost the first work my preceptor set me to do was scaling tartar from the teeth and cleaning and polishing them; while now we consider no operation in dentistry requires greater skill and thoroughness. In former days no medicament but an astringant was used in anything like a general way, while now there is no end to stimulants and antiseptics.

To Dr. Riggs, of Hartford, Conn., perhaps belongs as much credit for awaking an active interest in the subject as to anyone of his time; and for many years these affections were classed under one general head without differentiation, and called Rigg's disease. Dr. Riggs has left us no written statement of his work, but latterly the subject has been studied in all its bearings by some our best minds, and in some hands very flattering results have been reached.

CLASSIFICATION.

Prof. Black has given us much on this subject, and his classification seems to me the best. Diseases of the peridental membrane having their beginning at the margin of the gum in contradistinction to those beginning in the apical space are:

1st. Gingivitis.

2d. Calcic inflammation.

3d. Phagedenic Pericementitis.

It is not intended here to dwell at any length on Gingivitis. By this term is meant those lighter forms of inflammation of the gingival margins of the gums, occurring from soft deposits on the teeth or from constitutional causes.

Let us first, however, notice the structure and function of the parts. Dr. Black's description of them is as concise as any I have seen. What are known as the gingival margins of the gums, are those parts of the soft tissues that immediately surround the necks of the teeth, and are in conjunction with them, the free margin of the gum. The exposed surface or free margin of the gum is covered with a very dense squamous epithelium which fits snugly to withstand the severe abrading contact of food necessary in the act of mastication. This rests on a layer of softer epithelial cells which covers a series of papilla projected from the fibrous tissue beneath, the whole resting on the rim of the alveolus, and is drawn tightly around the neck of the tooth forming a sort of cushion to the tissues which it protects. It is also strongly attached to the neck of the tooth and the periosteum of the wall of the alveolus by radiating bundles of fibrous tissue that have become known as the dental ligament; that part of the gingival margin that lies in against the neck of the tooth is of different structure from its other parts. Here it is clothed with a soft, round, gland-like epithelium that suggest the formation of glands, but fails to entirely assume the glandular structure, tho it has been regarded as such by Serres. This which Dr. Black calls the *gingival organ* emits a profusion of small rounded cells, which are always found in the saliva, and are known as mucous-corpuscles. They can be had at any time for examination by passing a

thin blade under the healthy free margin of the gum. These cells when mixt with the micro-organisms always present make up those soft, cheesy masses which to the ordinary observer resembles pus, and some writers have regarded them as pus. They are, says Dr. Black, always found in these positions and must therefore, be considered normal. The question as to whether these cells or rings of cells found and here described are glands, cannot be yet answered. If they are glands, they have a function. We have some facts bearing on the question, however. It is a well-known fact that some glands have the power of secreting (Black) and excreting poisons : thus eliminating them from the system, and this process may produce hyperemia, or even inflammation.

It is known that mercury and iodide of potassium will produce inflammation of the gingivæ, and these cellsare more abundant at the same time. Also, that if these cells are taken and submitted to chemical tests after the person has taken iodide of potassium they yield iodine—in fact, are tinged with it. We, therefore, have here an evidence that gingivitis may be produced by constitutional causes; or, as Prof. Black says, from poisons that circulate in the blood, and have an elective affinity for this gingival organ.

So, then, we can speak of *mercurial* gingivitis and the same produced by iodide of potassium, each constitutional gingivitis and usually called salivation, the salivary glands being excited at the same time. This may run into pericementitis, and graver symptoms may appear, but the point of attack is always the gingivæ. Gingivitis may occur in young persons from local causes, a slighter form of inflammation, not destructive in character. This soon disappears if the patient adopts the vigorous use of the tooth brush, and stimulants, and antiseptics.

Gingivitis, simple, is not often considered grave enough to bring the patient to the dentist, but it may become important, as it is often the starting point for a less transient inflammation. The tenderness of the gums, the disuse of the brush, and of the teeth in masticating, favors the deposit of salivary calculus, and the disease thus develops another element for its perpetuation. When this element is present we term it calcic inflammation. The causes which induce these deposits may be constitutional, hereditary, or local, favored by the forms of the teeth, irregularities, by the neglected condition of the gums, as in simple gingivitis, lack of cleanliness, or disuse of the teeth.

Calcic inflammation is an important disease of the contiguous membranes of the teeth, because of its insidious character and the great number of cases that occur, often destroying nearly the whole denture before it gives any warning.

Calcic inflammation, when dependent on the deposition of salivary calculus, if taken in reasonable time, easily treated by simply removing the cause, and with the free use of the teeth and brush the parts in most cases resume a state of health. But when serumal tartar is present, it becomes more serious. Sanguinary or serumal tartar is deposited from the serum of the blood, as a result of the pathological condition of the gums, causing them to weep a serous fluid. If this serumal calculus was found only on the neck of the tooth we might more easily handle it, but it is so often found all along the root of the tooth, or at the apex of the root.

Dr. Black says he is of the opinion that it is determined by the irritation of the gingivæ. It differs from the other variety of calculus. It always appears under the free margin of the gum, and on any tooth where the irritation which may have been induced it occurs it is often in the form of thin dark scales, or nodules—very dense, and difficult to dislodge. Often, after the most thorough work possible, a close examination will disclose still more; whereas, salivary calculus is mostly found on the lingual surfaces of the oral teeth below, and the buccal aspect of the superior molars, and never under the free margin of the gum. Salivary calculus will excite active inflammation, and the gum will recede as it encroaches on it. But it will cleave off comparatively clean, in large scales, leaving the peridental

membrane intact, and if no serumal calculus is present the gums will grow back firmly to the neck of the tooth, the parts resuming a normal state.

Often, the salivary variety is in large deposits. I have seen them as large as the tooth itself. I have also observed that where the larger incrustations occur the serumal variety is not seen, and that the destructive process is not so dependent on the amount as it is on its distribution. Where it insinuates itself between the teeth, in small scales, and is more dense, the injury is the greatest. But when not mixt with sanguinary calculus, thoroughness in its removal, which in this variety is possible, and astringents and antiseptics and brushes are used, the parts heal rapidly, tho in aggravated cases a permanent recession of the gum will occur.

Serumal calculus is more destructive, not only to the pericementum, but to the adjacent tissues. It is mostly found in conjunction with the salivary variety, but I have often seen it where it was alone. The gums are not so tender, and the destruction more gradual and less conspicuous, the peridental membrane becomes affected, is thickened, the gums yield pus on pressure, and we feel to be in the presence of a grave disease. We know—I say we know, for we do—that if absolutely all the deposit is removed, where not too far advanced, the teeth can be restored to usefulness and health. It is the difficulty (insurmountable, shall I say?) of doing this first operation. Who can get it all off? The only evidence is a perfect cure. I can sometimes cure. I often use an antiseptic stimulant—Black's 1–2–3— (mild) first. The patient returns delighted after three or four treatments. I then remove with instruments the calculus, using the pushing force rather than pulling. The rationale of the treatment after the removal of the cause, is: We have here micro-organisms, hence we need antiseptics; a low grade of inflammation, hence we need stimulants.

Second only in importance is the patient's part. A few drops of the 1–2–3 on the brush daily, or a wash of cinnamon water. I use the Dunn syringe to inject the 1–2–3* after which I often inject peroxide of hydrogen, which leaves the sockets clean. It is well to use the peroxide first, also. Many antiseptics are used; also astringents and stimulants. Each has its advocates, but any of them used thoroughly is sufficient. We must modify our treatment of each case to suit the necessities as they arise.

It is to be expected that if the gum covers the root sufficiently to form an alveolus the membrane will be restored to health, and the osseous tissue rebuilt. But it must be impressed on the mind of the patient, that a reappearance of the trouble will occur if great care is not exercised.

By the term Phagedenic Pericementitis, is meant a peculiar, specific inflammation of the peridental membrane, and is expressive of its destructive character. Its chief pathognomonic sign is the occurence of small, but deep pockets, at the sides of the roots of the teeth, which are filled with pus.

A great variety of causes are given for this disease. Some claim it is caused by hereditary mercurial impressions, on the assumption that our forefathers subsisted on some form of this great remedy; some call it catarrhal, induced by mouth breathing; some say it is infectious; others that its cause is constitutional; some denote it as alveolitis. Each theory in regard to its etiology has able defenders.

You have your choice. You have also the disease to treat, and the man who can cure it, whatever be the cause, is the one to whom I would listen.

The recognition of the pus pocket enables us to classify the disease. We are then certain it belongs to the phagedenic variety. Therefore to differentiate closely between calcic inflammation and phagedenic pericementitis, we discover that the flow of pus from the alveolus is insufficient, as we have this in both cases. The

* Wilmington Dental Co., Philadelphia, is about to publish Black's new book on this and other subjects.

main symptom in phagedenic pericementitis is the destruction of the fibres of the membrane, which for the most part run lengthwise with the root. Hence pockets are formed which fill up with micro-organisms, pus, etc. The complaint has some peculiar characteristics not common to calcic inflammation, besides these pockets. It may affect a single tooth in an otherwise perfect set. I have under treatment now, such a case, the inferior sixth year molar being the only one in the entire denture which is attacked, the others remaining in a state of perfect health. The first indication of disease in this case was tenderness, a reddened tumefied gum, which on pressure yielded pus. I passed a thin blade down the buccal aspect of the anterior root, and the lingual side of the posterior. This lady, of all others I am favored with, is perhaps the most careful of her teeth. So I saw the disease early enough to perfect a cure. Yet to make it doubly sure, I examine it still once weekly. As yet the disease does not appear in any other tooth. A favorite point of attack is the palatine sides of the superior incisors; especially where these teeth are quite prominent. Dr. Patterson cites this fact to prove his catarrhal mouth breathing theory. I incline to the opinion that this is only a favorable point of attack, peculiar to conditions induced by the occlusion of the lower teeth. Aside from this I do not know that any favoritism is shown to the teeth. I have seen a single root affected where all the other tissues were perfectly normal. I have sometimes thought the disease infectious. I am therefore very careful to antisepticise my instruments. This disease does not seem to be dependent on the presence of calculus. I have seen it, tho rarely, where I could not find any calculus. Dr. Black believes the cause to be micro-organisms, because the remedies which cure are those which destroy microbes.

My treatment of phagedenic pericementitis does not differ materially from the treatment I have just given for calcic inflammation. A thorough removal of all the calculus which is indispensable to success, followed by the use of antiseptic stimulants. I use the injection every fourth day. Where I cannot cure a case, I have but little hope of the most extensive surgical operations. It is to be expected, however, that where the cementum is still vital, there will be a revivification of the pericementum, and the rebuilding of the alveolar dental walls. The micro-organisms and their spores must be destroyed, and a condition of perfect asepticism maintained, not only of the points of attack, but the whole mouth. To do this requires the hearty co-operation of the patient.—*Dental Review.*

Root Filling in American Dental Associations.

THE best method of using gutta-percha is as follows: After the root is ready for the filling, which presupposes it is dry, introduce eucalyptol, which is diffusible, and in which gutta-percha is slightly soluble. In a few minutes the excess of eucalyptol is wiped out fine-pointed cones, and then a solution of gutta-percha in chloroform is pumped in. This will permit the spreading of the material into all the apertures opening on the root-canal. The cones are not heated, but a pointed instrument which is heated is inserted in the large end of the cone, which is then inserted and the gutta-percha is then spread and diffused all through the root. If the gutta-percha were heated and forced in, the root would leak.

Dr. S.A. White, Savannah, Ga. How is the gutta-percha prevented from going through the foramen?

Dr. Harlan. If the foramen is so large as to permit that I don't try to prevent it. Gutta-percha is the least harmful substance that could get through. It is absolutely innocuous and non-irritant.

Dr. H. J. McKellops, St. Louis, has practiced and advocated this method of root-filling a long while, as is well-known, he having been one of the first to adopt it. I have seen beautiful teeth ruined by drilling, and specimens showing its effects which have been sent to him from all over the country. In using gutta-

percha, the instant it reaches the foramen the patient starts and you know it is time to stop. He can come nearer to perfectly filling a root-canal with chlora-percha, gutta-percha dissolved in chloroform—than with anything else he has ever known.

Dr. S. A. White had trouble frequently when he used the gutta-percha alone. Whether he pumped up air with it, he did not know, but he sometimes had after-trouble. To obviate this he had used long threads of cotton of the long staple kind, which is silky and strong. These he wraps on the smooth end of a broach, dips in the chlora-percha, and then passes up, and he has no trouble. He thinks dentists make as big mistakes in trying to clean roots as in letting them alone. An excellent method of filling root-canals was shown him many years ago by Dr. F. Y. Clark. In this method, the end of the root, at the apex, is filled with a small piece of hickory wood.

Dr. W. C. Barrett, Buffalo, used to introduce the gutta-percha on fibers of cotton, but he had abandoned that method, because the cotton is apt to become a sort of a piston which carries air up the canal, and with it the canal cannot with certainty be filled so perfectly as with the gutta-percha cones spoken of by Dr. Harlan. It is a mistake to suppose that the foramen follows the line of the canal up the root directly. He had been asked, "What about the apical space?" and in reply he would say that he does not believe there is any such thing; if there is, it is only occasional and must be due to pathological changes.

Dr. McKellops asked Dr. White how he would get the wood point up to the apex in a tooth with a very small, crooked canal.

Dr. White. There is no difficulty in reaching the apex of any of the six front teeth, to which the method with hickory points is especially adapted. He does not think it necessary to fill openings so minute that the finest broach cannot be gotten through them.

Dr. Ward. Practice makes perfect. Dr. Harlan probably makes a success with chlora-percha, and so may Dr. White with the hickory points. Others claim success with cotton, and cases filled with cotton may be successful to-day; but those who get hold of them afterward don't think so. The speaker uses oxychloride of zinc. When the oxychloride has been forced up in the same way as gutta-percha, it will stay there. When gutta-percha goes through the foramen, you do have trouble. He has seen teeth extracted because of it. If oxychloride passes through, there is perhaps trouble for a day or two, and then it disappears. He has used the oxychloride successfully for ten years.

Dr. W. H. Morgan, Nashville, Tenn., has been practicing dentistry over forty years, and he enlarges the root-canal wherever he can. In teeth with straight roots this can be done, and it is desirable so as to permit the operater to see. He cannot always go clear to the apex, but wherever it is practical he does it to get rid of the debris. When the roots are large, he prefers still to fill them with gold, but he does not fill roots indiscriminately. He gives them a thorough antiseptic treatment first, sometimes continued for weeks where he cannot get through to the apex, as he must be sure the root is in proper condition before it is filled. Some fill immediately. This may do at times, but he prefers the other method. If the foramen is very large he fills it, sometimes using a little gold wire, sometimes by other methods, and then goes on with the filling of the root canal proper. Perhaps oxychloride of zinc is the best thing used for this purpose, because it absorbs a wonderful amount of gas. He has good success in root-filling, and can show cases of more than thirty years' standing. He would insist on the enlargement of the canal, and he can see no reason why, properly performed, it should be objected to. It would certainly facilitate the pumping up of soft materials. He believes that no root ever was filled perfectly with chlora-percha, because the material is put into the root in a fluid form, and when the chloroform is evaporated the filling must lose in volume. When he uses gutta-percha in filling canals,

he simply softens it and then drives it up into the roots. It may cause a little pain, but gives no permanent trouble.

Dr. McKellops asked Dr. Morgan how he introduced chlora-percha into the canal.

Dr. Morgan replied that he had not been in the habit of using it, but he knew from general principles that anything which loses a portion of its substance either shrinks or becomes porous, and therefore chlora-percha cannot be perfect filling. As to Hill's stopping, it is not made at the present time. Dr. Hill said it was made of gutta-percha and quicklime. It was good for the purposes for which Dr Hill used it. In reply to a question by Dr. White, he stated that he had tried to fill roots with hickory, but had never succeeded.

Dr. White protested against anyone condemning a thing of which he knew nothing. He had filled straight roots with hickory for eighteen or nineteen years. He does not fill the entire canal,—not more than one-eighth of an inch at the apex. The object in using it is to know that the foramen is closed ; then you can fill the root with anything desired. The method is to file a piece of well-seasoned, dense hickory almost to a point ; then pass it up to the apex. If there is the slightest indication of pain, withdraw the wood, cut off a short piece from the end, again insert, mark at the cutting-edge of the tooth ; then again withdraw, and with a sharp knife make a groove around it about an eighth of an inch from the point, and bend the end over without breaking it off. Insert for the last time, the proper position being indicated by the groove, tap it home, and twist off the point.

Dr. Truman. A good deal of the talk on root-filling seems to be based on guesswork. Too many take the the different preparations, place them in the root-canal, and expect it to remain comfortable for all time. Dr. Head has sent him several teeth, the roots of which were filled with gutta-percha, oxychloride, and cosmoline. On cutting them into sections and examining under the microscope—they had been placed in aniline dye—every one was found to be non-leakable. The fillings were perfect, so far as the microscope would show. He had been led to conclude from this that every material used for root-filling, except raw cotton and wood, will answer the purpose. The question that has given the most thought is that no filling in a tooth-root can be perfect, and why ? Because the largest part of the tooth is a tubulated structure. These tubules hold organic material, and when the pulp dies this organic structure dies, and decomposition takes place at once, sulphuretted hydrogen being evolved to become a source of trouble. When the central canal simply is filled, this dead material is buried, and in the course of time, you have discoloration of the tooth. Any filling of the central canal only must be a partial failure. He had reached the conclusion that in filling a root account must be taken of the contents of the tubuli. The question then is, What agent will best prevent their decomposition ? From experiments he had settled down on the coagulators as best adapted for the purpose, because they change the character of the organic material in the tooth. Chloride of zinc is one of the best of these, because of its affinity for moisture. It will follow moisture to the extremeties of the tubules, change the character of their contents, and prevent their decomposition. A tooth treated with chloride of zinc will probably not discolor, and at all events there will be no trouble in the roots. He would not say that chloride of zinc permeates the tooth-structure, but he believes it does. The use of chloride of zinc requires care. If carried through the foramen, it causes inflammation. Hence, when he can, he fills the upper end of the canal, then places cotton saturated with chloride in the cavity for two or three days, and then he is prepared to fill it satisfactorily. He believes oxychloride of zinc is the best material to fill the remainder of the canal with, because it will keep up the effect he desires to secure.

Dr. McKellops. It is easy enough to open a root-canal a little, and few attempt to fill without enlarging the entrance to allow them to get into it easily. But he makes the point that no man can go to the end of the root with any certainty of following the canal. Chlora-percha does not shrink, nor does it become porous. The chloroform evaporates as the material is put in, which thereby becomes a stiff substance, and by the time the filling is completed all the shrinkage has taken place. It is now some thirty-two years since Dr. John S. Clark first brought to the attention of the dental profession the method of filling canals with gold foil made into cylinders, which he had learned from a gentleman named Badger. At the time of Dr. Clark's visit the speaker had a case of root-filling on hand in which Dr. Clark assisted him. The tooth was an abscessed incisor in the mouth of a young lady. After the abscess was cured, the root-canal was filled with cylinders of No. 4 gold foil rolled on a broach, and then compacted with whalebone such as is used to stiffen the lining of hats. He saw that tooth the other day, and there was not a bit of discoloration. It has never been touched from that day to this, and he is now working for the patient's grandchildren. He is a strong advocate of the oxy-phosphate of zinc, which he considers one of the best plastics ever introduced into dentistry, but its place is not in roots. It may be used in cavities which extend far below the gum, and where the structure is too soft to permit the use of gold, and after one or two years the structure will have become hard and firm, so that a perfect gold filling can be introduced; but as far as its use in root-filling is concerned, he wants to know how it is to be got into delicate, fine canals. It will set before it can be got to the end of the root.

Dr. Morgan. Is it possible for gutta-percha or anything else to lose a portion of its substance by evaporation and not become less porous?

Dr. McKellops. In filling roots with chlora-percha, the chloroform evaporates as the material is being worked and leaves the filling hard. Whatever shrinkage occurs through the evaporation is made up by the subsequent applications. It is worked nearly dry.

Dr. J. N. Crouse, of Chicago, felt interested and amused by the discussion of root-filling. On the question of coagulation, for instance, D. Harlan insists that coagulators are not proper materials to use, while Dr. Truman uses oxychloride of zinc, because it is a coagulator. I can use either method with success. If there is any objection to the use of oxychloride of zinc, it is the danger of forcing it out through the foramen. In his own practice he uses gutta-percha and gold or oxychloride and gold, filling the apical end of the canal with gold. He wants the gold especially with the gutta-percha, in which he thinks there is a slight evaporation.

Dr. J. D. Patterson, Kansas City, thought the subject of root-filling the most important before the profession to-day. He desired to draw attention to an improved solution of gutta-percha for filling root-canals. Most operators use the red base-plate gutta-percha, but a much better solution is made with the white gutta-percha filling material, which has less shrinkage than the red. In crooked canals he uses this solution almost exclusively, sealing the apex, and filling the apical third or fourth of the canal. It is bad practice to force the filling material beyond the apex. Oxychloride of zinc is the best filling for the remainder of the canal. He finds no trouble in forcing it to any part of the tooth, and he then feels that the organic matter is placed in a better condition than by any other method. Roots filled with gutta-percha, when cut open, have more odor than those filled with oxychloride.

Dr. White. After preparing the wood point, as he had previously described, he dips it always in chlora-percha. When the apex is thoroughly closed, it makes no difference what the remainder of the root is filled with.

Dr. J. Taft, Cincinnati. The term "apical space," sometimes used, is misleading. "Apical region," or "apical territory" would probably be more distinctive

and more readily understood. Some things which ought to be taken into account have not been considered in the discussion. We should not treat the teeth of a patient of twelve or sixteen years the same as one of forty, because the conditions are widely different. In early life the ends of the canals through the roots are more open than later. The tubuli are much larger and the tooth-structure of less density. A tooth as twelve is softer than at thirty or forty, contains more organic material, and is therefore more exposed to decomposition. Our treatment should conform to these differences. Change in the organic contents of the tubuli should be prevented as far as possible by the use of antiseptics and coagulants, or by desiccation. Securing the proper condition of the dentine of the roots of pulpless teeth is of greater importance than the selection of the material for filling the canal. All dentists have seen teeth discolored by the decomposition of their organic material. As to the treatment of the canal at the end, it is well-known that in almost all well-developed teeth there is an abrupt contraction near the end of the root. This is an important guide in the filling of canals. If there is any fear of going through, the foramen may be sealed up, for which purpose tin, gold, or lead may be used, and the remainder of the filling proceeded with. It is not of much moment what the canals are filled with after this. Some indeed leave them open.

Dr. W. H. Dwinelle, New York. The lesson of the discussion that nature is is exceedingly accommodating. The experiences related are very diverse, almost contradictory of one another. He had never filled roots with wood except experimentally, but he is satisfied that if they are filled with wood alone the operation will be imperfect. The gentleman who related the method says he dips the wood point in a gutta-percha solution, which makes the filling virtually a gutta-percha filling. If the foramen is sealed, it makes little difference what material is used for the rest of the filling. He has used antiseptics to sterilize the contents of the tubuli, and he does not think he ever had difficulty when he paid particular attention to the treatment of the tubuli. He has seen teeth whose roots he filled nearly or quite fifty years ago (he has used gold for the purpose all his life), and they verify his theory and justify his operations. The foil is rolled in long cones on broaches, and the cones are packed in with elastic instruments.

Dr. W. W. Allport, Chicago, in root-filling wants to know not only how he does it, but why. When the pulp dies, an abscess forms unless it is prevented by treatment. The office of the pulp is to form the dentine. When the pulp is removed, the principal source of nourishment of the tooth is taken away, and the tubuli are left filled with organic matter to decompose and generate gas. You may fill the canal as perfectly as you please, and these gases will percolate through the cementum and cause irritation of the pericementum. The first thing, therefore, after the pulp is removed, is to get rid of as much of the contents of the tubuli as possible. For this purpose there is nothing better than heat. Dry the tooth with the hot-air syringe, and then pass up a root-drier, after which treat the root antiseptically. He is in the habit of filling always with oxychloride of zinc, because of the antiseptic character of the chloride. It will prevent further decomposition as far as anything he knows of. If the dentine is made perfectly antiseptic, a point which is too often overlooked, no further trouble need be apprehended. In cases where the pulp has been long dead and the tubuli are filled with dead and decomposing organic matter, he injects peroxide of hydrogen, drying the root thoroughly first. The peroxide will reach it readily and drive it out, the injections being repeated as long as there is any indication of decomposed matter. There are many things to fill with. Gutta-percha and gold are good, but they are inert. He fills the canal full of fluid oxychloride, arming a broach with cotton to force it up. With this any little fissures or apertures are readily reached, while it is hardly possible to force it through the foramen unless there is an abscess. Indeed, as a

rule, hardly anything can be forced through. More trouble comes from not clearing out the debris thoroughly and not filling perfectly than from any escharotic effects of materials forced through the foramen. In reply to a question by Dr. Taft, Dr. Allport said he did not know there was any necessity, if the canal was thoroughly treated, for filling it perfectly, but it is safe to do so, and it may not be safe not to do it.

Dr. Dwinelle agrees with Dr. Allport that the office of the pulp is to form the tooth, and after the maturity of the tooth its function ceases, and it is not so important then, that the pulp be alive. If the tubuli are thoroughly sterilized and the fibres coagulated, they become inert, and do not throw off gases. He thinks dentists pay too much attention to the preservation of the pulp after the patient has arrived at forty years of age or so. After say fifty years of age he does not consider the pulp essential.

Dr. W. Xavier Sudduth, Philadelphia. The securing of coagulation, which has been dwelt on, is of no value, for micro-organisms will come in spite of it. The whole story lies in securing an aseptic condition of the tissues.

Dr. Marshall. Will micro-organisms which live without oxygen produce decomposition, fermentation, or putrefaction?

Dr. Sudduth. Putrefaction may be the secondary stage of fermentation. So far as he knows, fermentation does not go on without the presence of moisture and oxygen. After the canal is perfectly sealed at the apex, micro-organisms cannot enter. In regard to the decomposition of the organic substance in the tubules, the micro-organisms cannot enter them, because the diameter of the tubule is too small to admit them. Four things are essential to the development of micro-organisms, except those which are known as anerobic,—a living germ, a suitable medium, moisture, and the proper temperature. Destroy any one of those four conditions and the organisms are destroyed. Desiccation will prevent the development of the germs. The micro-organisms which cause decay when sugar is present produce lactic acid, which takes out the lime-salts of the tooth, and then the organisms live on the basis-substance. They are never found in undecalcified dentine. Decalcification always precedes the entrance of the micro-organisms into the dentine. There is no difference between fermentation and putrefaction, but one may be a primary and the other a secondary stage of the fermentative process.

Dr. P. T. Smith. There is no doubt of the formation in the tubuli of gases which are injurious. They have sufficient expansive power to destroy the intertubular structure entirely. We cannot make tooth-structure in the mouth absolutely anhydrous. If it were dried perfectly, in twenty-four hours it would again be full of moisture received from the outside. The nerve carries the vital force, and it should be maintained where possible. He objects to the materials used for filling canals; to the chloride of zinc because it is irritating, and because it will disintegrate in time, and after it has disintegrated moisture will return to the tooth-substance. Gutta-percha is objectionable because it shrinks, and it will also decompose in time. He did not think that driving a wooden peg in was professional treatment. The dynamic influence of the wood would through its absorption of moisture be disastrous and would disintegrate the surrounding tissue. There is the same trouble with gold, tin, or lead, or anything else which by dynamic force may injure the integrity of the dentine. Gold fillings are sometimes the greatest enemies to success simply through their density. How much force do we use in inserting fillings? With hands pressure from forty to sixty pounds; with the hand-mallet from sixty to one hundred and twenty pounds. We leave latent in the filling at least one-half of the force expended, while the resistance of the dentine within the limits of continued vitality is less by one-third or one-half. If we use a material in filling root-canals which will exert a greater pressure than the

power of the vital resistance of the dentine, we defeat the object of the operation.

Dr. Marshall wanted to know how Dr. Smith demonstrated that the force of hand-pressure was sixty pounds and of the mallet one hundred and twenty pounds.

Dr. Smith had made a dynamometer some twenty years ago, which, while not perfectly accurate, was sufficiently so to lead him to these conclusions. He believed that the figures as stated were approximately correct.

Dr. F. Y. Clark, Saratoga, wished to correct an error of statement by Dr. Sudduth, who, if he understood correctly, stated that bacteria were never found in normal dentine.

Dr. Sudduth. They are not found in undecalcified dentine.

Dr. Clark had investigated the subject considerably. In many cases where the end of the root up to the foramen, and the cavity in the crown as well, had been perfectly filled, he had, after say two years, found an offensive odor. It is difficult to examine dentine under the microscope so as to discover organisms, but by putting a little of the dentine from one of these odorous canals into a few drops of sterilized water and agitating it for a time, the micro-organisms are easily found. It is reasonable to suppose that they were developed from the decomposed tissue of the dentine or were there before the fillings were put in. However thoroughly the canals of devitalized teeth are cleansed, there will always be some animal tissue left, and also a little moisture, to be sealed in when the root is filled. The way to prevent trouble is to cleanse the canal as perfectly as possible. He regards it as almost malpractice to enlarge the canals. If too small to permit the entrance of the instrument without enlargement, they will take care of themselves. In operating he always puts the rubber-dam on, and after the root is cleansed as thoroughly as possible he disinfects completely. For this there is nothing better than pure carbolic acid or creasote, a little of which should be left in the canal, which is then ready to fill. In a tooth so treated there will be at the end of twenty years an antiseptic odor, and there will be no change in the dentine. Fermentation is very easily understood. A grain of sugar or animal tissue placed in sterilized water will show the presence of micro-organisms in twelve hours; in twelve hours more, perhaps, there will be putrefaction. If fermentation were studied more, it would lead to valuable results in the treatment of disease. In the discussion the fact that all canals are not alike seems to have been forgotten. They are found of all sorts and sizes. In some cases one filling will do, and another will not. He uses wood sometimes, and has seen teeth thus filled for twenty years which will compare favorably with any gold or oxychloride fillings. The wood is prepared by reducing it with a draw-plate to little pins the size of a hair. The wood is dipt in creasote or carbolic acid, forced up nearly to the foramen, then withdrawn and cut half-way through at the proper distance from the end. The point is then dipted in chlora-percha and the wood driven quite up to the end of the canal and broken off at the cut. The foramen is thus perfectly filled, and the root and crown can then be filled with any material desired. What he particularly desired to emphasize is the fact that fermention goes on in all cases in root-canals not carefully antiseptically treated and filled.

Dr. Barrett could not conceive of the existence of a septic condition of the tubuli. Their contents are albuminous, and coagulate spontaneously immediately after they are severed from vital connection; and after coagulation they are melted down by the action of micro-organisms. This supposes that the influence of micro-organisms is felt in the tubuli. Dr. Miller says the micro-organisms do enter the tubuli. Their enlargement is produced by the presence of micro-organisms. He thinks that all talk based upon the supposition that there can be a septic condition of the tubuli before they are acted upon by micro-organisms is a mistake. He objects to putrefaction being called a secondary stage of fer-

mentation. Putrefaction is a distinct process and yet identical, in that it is brought about by the action of organisms, but by an entirely distinct class. As a rule it does not succeed fermentation. When it does, it is because the putrefactive organisms have invaded the fermentative compound and driven out the fermentative organisms. There are fermentations, as the digestive ferments, which are not the product of micro-organisms. After the canal has been rendered aseptic, why should an antiseptic be introduced there? He objects to oxychloride as a root-filling, because its antiseptic properties are unnecessary in a bland, healthy, wholesome condition of the canal, and because it is an irritant. He wants to put into it something that is as nearly neutral as possible, and that is gutta-percha.

Dr. Allport. What produces gas in the tubuli?

Dr. Barrett. There is no gas in the tubuli. Putrefaction is found in the root-canal, but not in the tubuli.

Dr. Allport. If the dentine of a tooth with a dead pulp is cut, the odor of the excavator or bur would indicate putrefaction in the tubuli.

Dr. Barrett. It may occur after the enlargement and melting down previously spoken of.

Dr. C. S. Stockton, Newark, N. J., wished to correct the statement of Dr. Dwinelle's that the pulp is of no use except to develop the tooth. The speaker does not believe it and the statement should not be allowed to go uncontradicted. The pulp was intended to be preserved and to conserve the health of the tooth.

Dr. Dwinelle did not advocate the destruction of tooth-pulps on the idea that the teeth were just as good without them; but he has in his practice teeth with dead pulps which were properly treated and which fulfill the requirements of teeth to-day, more than forty years since they were treated, with every evidence that they are in normal condition. They have not deteriorated in color. That teeth which are devitalized are useful is proved by the fact that in extreme old age the pulp and nerve are entirely obliterated. He spoke with some feeling on the subject, because Dr. Shrady, the editor of the *Medical Record*, had attacked us as a profession, claiming that every tooth which was in this state was dead and useless and should be removed as a foreign body, thus showing his ignorance of the subject. The speaker does not by any means recommend destroying tooth-pulps. As far back as 1844 he had advocated the saving of teeth with exposed pulps, and he believed he was the first to recommend that partially softened dentine over nearly exposed pulps be retained. What he wished to do was to put in a plea for the so-called "dead teeth," since Dr. Shrady had attacked the dental profession in such a merciless way.

Dr. Marshall wished to correct Dr Dwinelle. It was not Dr. Shrady, but Dr. Sexton, one of his contributors. who wrote the article in question.

Dr. Patterson. The blame in this should rest where it belongs, on Dr. Shrady. The speaker has recently read Dr. Sexton's book on these subjects, and the dental profession ought to give him the credit of doing more to call the attention of medical men to the obscure diseases caused by reflex irritations and diseases of the dental arch than any other man in the country, He has created a sentiment which has done good, but, at the same time, he has made many glaring errors in his statements as to the possibility of retaining dead teeth in the jaws. But Dr. Shrady's editorial notes have been unjust, unscientific, and sometimes ungentlemanly to the dental profession.—*Cosmos.*

Unusual Toothache.—Dr. P. T. Smith related in American Dental Association, a case of paroxysm of pain; every means of relief had been resorted to. There were no bad teeth or cavities. The excision of the root of one tooth cured the ailment. Extreme care should be exercised in diagnosing these cases.

Reflex Action.

DR. E. D. ANDRUSS, Dallas, Texas, relates an instance of a lady whose left arm was paralyzed, which was cured by the extraction of a tooth with an exposed pulp. In the *Lancet* fifteen hundred cases of deafness are reported, of which five hundred are caused by dental lesions; in most there was no pain in the teeth. A case now in his hands is interesting: The lady complains of a dull, heavy pain of the left side of the face. He has examined the teeth thoroughly, and can find no deficiency among those on that side of the face. They give no response to heat or cold, but tapping the first molar on the opposite side makes the patient flinch slightly.

Dr. S. G. Holland says: Some time since a surgeon, one of the best in the South, had called him in to see a patient suffering from a trouble in the antrum from a pistol-shot wound received over a year previous. He took a suitable instrument and found there was engorgement of the antrum. The question was how to get the pus out. He extracted a bad tooth, opened through the socket into the antrum, and removed the pus without difficulty, and a cure was readily effected. A young lady who had suffered for three years with an abscess under the symphysis of the jaw, during which time she had been treated by her uncle, a well-known physician, was sent up to Dr. Westmoreland, who being unable to locate the cause of the trouble satisfactorily, called me in to see if the teeth might have anything to do with it. On examination there was no discoloration about the teeth over the abscess, but with a probe he found necrosis about the roots of the two lower centrals, which were dead. The patient had suffered before suppuration began with severe reflex pains in both ears for six or eight months; then the pains gradually left her. He extracted the offending teeth, cut away the necrosis, and sent the patient home. In six weeks she had completely recovered. The origin of all the trouble was accidentally biting on a chicken-bone.

He has found sodium salicylate an excellent remedy in many cases of neuralgia. For a lady suffering from neuralgia in the left side, arm, and leg he prescribed, sixty grains, ten to be taken every two hours; then omit for six hours, after which repeat the powders. Generally neuralgias arise from the teeth.

Dr. Holland says that in treating antral troubles it is best to get at the cavity from the bottom. Pus and other debris are thus more readily removed. Some diseases of the antrum are cured merely by the extraction of a tooth which has perforated the floor. Sometimes, however, they are obstinate; but if there is no necrosis, with a good opening secured, the disease will usually cure itself. He has now under his care an interesting case which, tho not an instance of reflex action, he is tempted to speak of. It is a little girl, about five years old, just now ready to erupt the first permanent molar, whom he has been treating for nearly a year. About a year previous to her coming into his hands a physician had extracted a dead second deciduous molar, which was followed by swelling and soreness. At the time he first saw her the jaw was still swelled. An examination revealed considerable necrosis. He took out at first a piece of bone three-quarters of an inch long. He then found another, and some pus continued to discharge. He uses aromatic sulphuric acid, and has taken out four pieces of bone which have sloughed off. The father of the child told him the day before he left home that the jaw was now of almost normal size.—*Cosmos.*

Chemistry in Dentistry.

WE stand to-day in the immanent presence of untold overpowering possibilities. The scientific world is to-day in the throes presaging the advent of new and greater things in every department. Every one who had the privilege of a regular curriculum remembers that the most despised, obscure, and generally uninteresting branch of the whole course was chemistry. But chemistry has lately

become the most fruitful source of contributions to our materia medica. Almost all of the new remedies are products of synthetical or analytical work in the laboratory. Carbolic acid—phenol—heads the list of analytical products. Just now we are getting acquainted with a class of agents – synthetical products – which bid fair to show themselves valuable,—antipyrin, antifebrin, and phenacetin. Others are being formulated; just as in everything else, one discovery begets another. In chemistry we find the richest source of valuable agents, and should be better attended to in the literary preparation of students for the prosecution of dentistry. Professional schoolmen have a right to expect that students shall be generally well grounded from a broad literary stand-point, so as to enter intelligently on the work of obtaining their special qualificatious.—*Dr. D. R. Stubblefield.*

Physiology of the Nervous System.

DR. W. SHARPEY, ENGLAND.

NOWHERE has the spirit of modern research been more active or more fruitful than in the physiology of the nervous system; but as this was made the subject of an elaborate address delivered before the Association three years ago, I shall confine myself to one or two later accessions in this department.

I must, however, first notice the important method of research, introduced some years since by Dr. Augustus Waller, for tracing the distribution and determining the functions of nerves. This method consists in taking advantage of the disorganization of the peripheral part of a nerve which follows on its section, in order to identify its fibres, by their altered state, when associated or entangled with nerve fibres derived from other sources; also by stimulating a nervous trunk after the fibrous tributaries have been thus rendered ineffective, to ascertain what share of the common function belongs to each.

On all sides inquiry has been carried on into the electricity of nerves and muscles; but out of so vast and valuable material I would merely point out as specially worthy of attention the investigations of Pfluger into the laws of the electric excitement of nerves, as well as the discussions to which they have given rise.

Tho every part of nervous physiology possesses intense interest, I feel most deeply impressed by the knowledge recently gained respecting the influence of the nervous system on the organic or nutritive functions. Many long years did physiologists search for positive experimental evidence of the influence of nerves on bloodvessels. It has now flowed in abundantly; and I cannot help ascribing some considerable share of the success of recent inquiries to the employment of the electric induction coil and intermitting current, as a much more effectual mode of electrically stimulating nerves than the means previously in use.

The influence of the nervous system on secretion has long been acknowledged. The sudden flow or arrest of various secretions through mental states afforded ample evidence of the general fact. Lately, however, it has been shown by Ludwig, Bernard, and others, that the secretion of glands, and more especially of the salivary and lachrymal glands, may be increased by artificial stimulation of their nerves, both direct and reflex. Bernard has also observed the remarkable fact, that while the gland is in activity and secretion going on, the flow of blood through its vessels is greatly increased, and the passing blood, thus increased in quantity, does not acquire its usual dark color in the veins. The interesting result, too, has come out, that while stimulation of certain cerebro-spinal nerves proceeding to the salivary glands augments the secretion, similar excitement of the sympathetic branches checks its flow, and also greatly reduces the current of the blood.

It is thus plain that the nerves operate on the bloodvessels; the cerebro-spinal causing dilatation—acting probably as the vagus under similar excitement affects

the heart—while the sympathetic has the opposite effect. Nevertheless, there are other phenomena brought out in these experiments going far to show that in promoting secretion the stimulated nerve does not act merely in an indirect manner, through the change caused in the vessels; and there are not insignificant grounds for supposing that the nervous excitement may operate directly on the elements of the gland, and bring about physical and chemical changes in the contents of the gland-cells.

There is also independent evidence of a more conclusive character to prove that cells, or rather their contents, may be directly influenced through the nerves. The pigment-cells of the skin of the frog change their appearance under the influence of nerves; and this phenomenon has been shown by Professor Lister to consist, not in a contraction and dilatation of the cell-wall, as was supposed by the German physiologists, but in a movement of the minute pigmentary molecules with which these ramified cells are filled; and this movement may be brought about by stimulating the nerves, both directly and in a reflex manner. That chemical changes in cells may be influenced through the nerves, is shown in a striking manner by Kölliker's experiments on the luminiferous organ of the firefly. Facts such as these appear to me especially worthy of regard, as the phenomena they present, being comparatively simple and open to observation, are well calculated to afford an insight into the agency of the nervous system in more recondite nutritive processes.

I am led by these considerations to remark on the great advantage that has accrued, and is likely further to accrue, from an extended acquaintance with the structure and economy of creatures of essentially simple organization. It is in these humblest representatives of the living organism that we may hope to find physiological problems presented in their greatest simplicity, and most thoroughly disentangled from unessential complications. Many ingenious but futile theories of muscular motion would never have seen the light had the vitally contractile substance and its affections been studied in the protozoa.—*Medical Times.*

Tooth Preserving Qualities of Filling Materials.

BY DR. M. R. HARNED, ROCKFORD, ILL.

TOOTH filling as usually practiced is very largely mechanical, the success of the operation depending on care in removing all infected portions of the tooth, and skill in inserting a good filling.

For some cavities this is the very best that can be done, in others it is the very worst.

Of all our filling materials *gold* is one most generally used. It, however, possesses no tooth preserving qualities except as its ductility, malleability, cohesiveness, firmness and beauty makes it readily adaptable to the walls of the cavity, allows us to restore the natural shape of the tooth, stands attrition and pleases the patient, and this is much. In its relation with tooth substance it is entirely neutral, it simply excludes foreign substances and thus saves the tooth. In its relation to the pulp, if in close proximity, its conductibilty makes it repugnant, unless the pulp is protected by some non-conducting substances.

As a filling material then it is especially adapted to saving teeth of good structure, and is not fit for those of soft structure on account of the force required in manipulation, nor for cavities of decay that extend their decalcifying influence to the pulp.

Tin is probably the most compatible with tooth substance of any metal known to our use. To what this is due I cannot say, unless it is on account of its non-conductibility. As a filling material it preserves the tooth, being even more readily adapted to the walls of the cavity than gold, but on account of its softness and

dark appearance it is impractical at the present time, except as combined with gold or some other metal as in amalgams.

Amalgams, tho unsightly, are adapted to saving just such teeth as gold is impractical for. This I believe to be due in part to the galvanic action caused by its combination of metals. Then its plastic condition at the time of insertion and its subsequent hardness and strength on setting, enables us to bridge over semi-decalcified portions of the tooth, overlying the pulp, saving them permanently and comfortably; whereas, if the tooth substance that was decalcified had been all removed, an exposure and subsequent trouble with the pulp would have ensued.

There are many formule of alloys for amalgams, but the essential metals are silver, tin and copper, with small quantities of gold, zinc, platinum, etc.

Silver is the base of all standard alloys; it regulates the setting by hastening it, it expands on setting, and by its combination, sulphuretted hydrogen with which it frequently comes in contact in most mouths, forms sulphate of silver, which forms a sort of an impenetrable coat over the surface of the cavity, saving the tooth, but discoloring it and making it unsightly.

Tin in an alloy reduces the conductibility, aids in amalgamation and helps to prevent discoloration.

Copper in an alloy favors setting and seems to make the filling compatible with tooth substance. I believe this to be due to the action of sulphuretted hydrogen on it, forming the sulphate of copper, which is deadly to all parasites and seems to form a coating, an impenetrable coating, as combined with the tooth substance. It adds to the whiteness on amalgamation, but this is not permanent.

Now, I am much in favor of amalgam fillings where not conspicuous, in soft, or very badly decayed teeth, containing live and healthy but nearly exposed pulps; and *especially* in favor of amalgams containing copper.

Oxy-chloride fillings are practically worthless except for roots, or as temporary fillings.

Gutta-percha is a good temporary filling. It being a non-conductor it makes an excellent protection to thermal changes, under gold, for the pulp of a tooth. But under amalgam I have not found it so desirable, as there seems to be an incompatibility between the two. For a capping under amalgam I have found oxide of zinc and oil of cloves excellent. Gutta-percha is an excellent root filler and a good cavity liner.

Oxy-phosphates are in many respects the best fillings that we have, as they are easily and comfortably inserted, and come the nearest to forming a chemical union with the walls of the tooth, stopping all decay by the cut off of the supply of oxygen. The greatest trouble is they are not permanent, and are very good conductors of heat and cold. There is one peculiarity, it is of almost certain death to the pulp if placed in anything like proximity to it, and it seems to mumify it, and yet I know that a great many use them in badly decayed teeth as temporary fillings to await developments.—*Dental Review.*

A Noble Fee.

SERGEANT-MAJOR FREYER, M. D., I. M. S., has received a fee of one lac of rupees (10,000 sterling) from H. H. the Nawab of Rampur, as a token of esteem as well as an acknowledgment of his valuable services in the successful treatment of himself and General Azimuddin, the popular head of the Administrative Agency of the State, who had suffered for nearly three months from a malignant rheumatic fever; his recovery has been the occasion of great rejoicing at Rampur. This is said to be the largest fee ever received by a medical practitioner in India, and probably has never been exceeded in any country.—*British Medical Journal*, October 6, 1888.

Treatment of Teeth Having Foul Pulps.

DR. A. RETTER, UTICA, N. Y.

I will not divide this class of teeth into several classes according to the condition they are in at the time we receive them for treatment, butsimply claim that whatever their condition may be, whether they are sore or not, with swelling, or perfectly quiet at the time a dead pulp is diagnosed, the first effort to be made is to open into the pulp-chamber and root and to remove the cause, which is the decomposed tissue in the canals and dentinal tubuli. Even where there is a certainty of pus and a fistula sure to form, the opening into the pulp and its removal will render the forming of a fistula less painful and limit its area; and quite often, if proper local and systematic treatment is resorted to, it will prevent a fistula altogether, and the tooth or root may be restored to a comparatively normal condition without useless destruction of tissue. If the tooth is sore and very painful to be operated on, then a sharp drill, a smooth-running hand-piece on the engine, the steadying of the tooth by the fingers or other mechanical aid, or the local application of cocaine, will aid greatly in accomplishing the object. In such sore and painful cases it is better to simply wash out the pulp-chamber, pass a fine broach into the canals to facilitate the escape of gases, and then if there is *merely pericemental inflammation* it may be reduced by the persistent local application of tincture of iodine and aconite, or iodine and cocaine, or the Darby pepper plasters. If there is a large swelling with pus at the end of the root so that a fistula is desired, the drilling through the alveolus will give quick relief. However, I hardly ever have to resort to this method, and would only do so with anterior teeth, or when I feel certain of striking the sac. With posterior teeth reaching the sac is uncertain, and in failure is accompanied by increased pain and destruction of tissue; then the pepper plasters and systematic treatment will aid promptly, reducing the pain, and often cause a resolution without a fistula. The systematic treatment consists in the administration of chloride of ammonium, a teaspoonful to a glass of water, and out of that a tablespoonful every two hours till the face becomes flushed. It is a refrigerant and powerful resolvent and alterative. Iodide of potassium in doses of five to fifteen grains, three times a day, is also a valuable remedy, it being likewise a powerful resolvent and alterative. I use it especially where there is much pus. In simple pericemental inflammation, fluid extract of veratrum viride, a drop every hour till seven drops are taken, will prove valuable. Internal remedies are a powerful aid in these affections, and their use and administration should be carefully studied. I generally use internal remedies, and consider them of as much importance as local remedies.

My aim is always to first restore the tooth, and the patient to a condition to be operated on. As soon as this condition is established, the more thorough removal of the septic matter in the canal and dentinal tubes is commenced. To do this effectually the rubber-dam should be applied whenever possible. Having removed whatever more solid remnants there may be, I wrap a few fibers of cotton or silk around a broach, and then repeatedly wipe or mop out the canal with a strong solution of ammonia, which aids in the desiccation of the septic contents of the canal and tubuli. It must be remembered that the septic matter is not only in the root-canal, but in the dentinal tubes. To remove it from or destroy it in these tubuli it must be reached by imbibition of fluids which will change its character so it can be more readily washed out or subsequently affected by the germicide used. Carbonate of sodium packed into the pulp-chamber and root-canals and left for a day, well sealed in, will also accomplish this object. Indeed, I believe it to be one of the best applications at this stage of the treatment, and I have the best success from it. It saponifies and renders soluble the septic contents so that they may be readily washed out with hot water and made ready for the dressing with a

germicide. No substances which have the power to co gulate albumen should be used at this stage, for such action prevents the ingress or penetration of a germicide, as well as the escape of septic matter and its gases. A tooth may become well by their use at this stage of treatment, but if it does it is in spite of such unreasonable treatment, and not on account of it. The washing with ammonia or the carbonate of soda treatment I invariably follow up with another thorough injection of peroxide of hydrogen. This agent is of especial value in blind abscess or pus at the end of the root. It will penetrate it and cleanse it by combining with the pus-gases. It swells, effervesces, and thus drives out the pus. It will penetrate more readily and deeper than any drug which I know of.

Having thus removed the septic contents as thoroughly as possible, I dry the cavity carefully with hot air injected under pressure of from thirty to fifty pounds. For this purpose I have an air-receiver into which the air is pumped. From this it passes through a hot-air syringe. I dry the tooth thoroughly, and often am astonished at what an amount of odor is expelled, even after the most thorough and painstaking washing and mopping of the canal. I consider this hot-air treatment as the best means to be employed at this stage. Where a fistulous opening exists, it will force the pus clear through it better than anything I have ever seen, and it will also force the medicines clear through. Where there is no fistulous opening, it will drive the medicine to the points wanted. It will dry a tooth thoroughly and quickly, and put it in the best condition for the reception of the germicide dressing. When absolutely dry, I prefer to drill a root-canal whenever practicable; in fact, any root that can be safely drilled. There is, perhaps, no better way of removing septic contents beyond any doubt. Drilling a root-canal is rendered much easier after it has been cleaned and dried. However, labial roots of molars and anterior roots of lower molars cannot always be successfully drilled. Years ago I broke an entire stock of dental drills in my vain efforts to do so, and since I cannot get without it I prefer to take no chances, unless *I am sure of a good result.*

The dressing to be next applied to the tooth consists simply of cotton steeped or soaked in a strong solution of hydronaphthol in absolute alcohol. It is almost odorless, and being perfectly soluble in alcohol will, when placed in the tooth, penetrate into the tubuli on account of the affinity of the alcohol for water, thus abstracting the water from the contents of the tubuli and thereby robbing germ-life of one element of its existence, which is moisture. Hydronaphthol in my practice has filled the place of a germicide most successfully. I do not like the use of essential oils. Oil and water will not mix, and I prefer to avoid anything that has a tendency to clog the dentinal tubes. Perchloride of mercury in combination with tartaric acid, so as to prevent the formation of albuminates, is also a favorite dressing. I do not like to use it in the anterior teeth, for fear of subsequent discoloration. However, where this is not to be feared it is beyond doubt the most powerful germicide that can be applied. It also has a strong affinity for water,—a valuable quality for a canal-dressing. Iodol dissolved in alcohol is another good dressing, and, indeed, the antiseptics for this purpose are multiplying rapidly. It must be observed, above all, that it is not *alone* the drug that is employed that brings the effect, but the manner in which it is applied. Thoroughness is essential.

The dressing being applied, the tooth is sealed with gutta-percha and the patient dismissed for a week or more. If severe pain should ensue in spite of additional systematic treatment, I open the tooth again and wait a few days and then repeat the process. It is not often that after a thorough cleansing such a proceeding is necessary. Yet, with the utmost care I do not save all teeth of this class, and sometimes in spite of my best efforts the forceps has to be applied. It must be borne in mind that in some constitutions the vitality is low and nature

does not repair so readily, and tho you may drown the tooth in germicides, tho you may fill the roots ever so completely, in such depraved organisms at every depression they undergo a pulpless tooth is at any time liable to brew trouble.

If after the dressing has been applied for a time no trouble ensues and on removal of the dressing no odor is perceptible, the tooth or root can be filled. There are those who advocate filling immediately after the first cleaning and drying of the tooth. I never could see any need in haste. In anterior teeth which can readily be drilled to the apex, if satisfied that the root is thoroughly clean and disinfected, such treatment may be resorted to, especially if you cannot see the patient again. In posterior teeth, or in teeth with small and tortuous canals, it does not seem to me to be good practice ; and it strikes me as absolutely essential that the contents or the tubuli shall be thoroughly sterilized beyond a doubt before the tooth should be closed permanently. True, if the foramen is open, a tooth after the first dressing is applied and sealed gas-tight, often gives trouble and necessitates a reopening. Such soreness or pain is simply caused by septic poison, which will escape through the foramen, irritating the tissues beyond. Certainly, if immediately filled to the apex, such poison could not escape through the foramen, and immediate trouble might thus be avoided. However, it seems to me this is deceptive, for the closing of the foramen does not do away with the septic condition of the tubuli, and tho temporarily quiet such a condition of these tubes will give trouble by septic penetration through the walls of the root to the pericementum. The very symptom of a second appearance of soreness and pain after a dressing has been applied is a good barometer, indicating your work has not accomplished all you wished it to do, and, therefore, you had better do it again. As soon as all septic matter is disposed of there will be no more irritation through the open foramen.

Of course, this reasoning does not apply to teeth that have never been inflamed or where the fresh pulp has been removed.

The after-success and comfort of teeth thus treated depends largely on the care and choice with which the roots shall be filled. Up to this stage I have avoided clogging the tubuli. Now I desire a material that will go to the end and soak into the tubuli as much as possible, and for this purpose I prefer two agents. The first is oxychloride of zinc, provided the canal is large enough to permit of its successful working. This material, from its affinity for moisture, will penetrate deeply and persistently into the tubuli, coagulating whatever tissue may be in them and rendering them non-decomposable. The second is a strong solution of hydronaphthol in alcohol, in which shellac is dissolved till it forms a thick paste. This material can be worked into the fine lingual root-canals, too fine to be drilled. It can be pumped clear to the apex with safety, and has proved itself an excellent filling-material for this class of roots.

In conclusion, I cannot refrain from again stating that the successful treatment of teeth with foul pulps depends largely first on the thoroughness with which the decomposed tissue is removed or destroyed, and secondly on the thoroughness with which the roots are filled and the space previously occupied by the decomposed tissue supplanted by a non-decomposable substance.—*Cosmos.*

Rules of Health.

DR. BONWILL says : To ourselves we must look for our success, each acting up to the highest standard in his talent with persistence, guided principally by physical and other natural laws.

Our morals are largely within our own hands and subject to our food and how we eat it.

If we wish to understand ourselves we must begin early and not be afraid to see our character mirrored before our own eyes.

With the brightest intellect and highest talent no one can rise to any eminence without *obeying laws.*

In the choice of food we must remember that "what is meat for one is poison for another."

Notwithstanding, we may choose the foods best adapted for us, yet, without proper mastication and knowing the principle on which foods act, they will not avail us their full value.

We should know the fullest significance of bread as nutriment and mechanically for bulk.

We should better understand the use of water,—when to take it and its effect before and during and after digestion.

We should understand that some articles of diet have as much a tendency to corrupt our morals as alcohol has.

We should better know the use or non-use of condiments.

Sugar is one of the most villanous of our diets.

Stimulants such as coffee and tea—good as they are—should have more consideration as to when and how and by whom they should be used.

The saliva should have rational treatment and its uses fully understood.

The uses of the teeth and all the facts associated with them should be so explained that any one can grasp the philosophy of mastication.

We should know the chemical nature of our food and how nature makes use of each constitutional element, and where and for what it goes.

The air should not be least in this work of mastication and nutrition, together with that kind of exercise best adapted for sedentary and out-of-door life.

A New Disease.

DR. C. M. WRIGHT, CINCINNATI.

A dentist, and one who claims that he is only a dentist, has isolated and described a prevalent disease, which he claims is epidemic in the ranks of the dental profession. The effect of this disease, according to this writer, is serious. It threatens to cramp the usefulness of the dental society, the dental college and the dental profession. It is claimed to be steadily on the increase in the East and West. The etiology of the disease is shrouded in some mystery, but an hypothesis can be constructed on modern methods. A medical micro-organism, whose exact place in the microbe kingdom is not yet definitely established, has found a lodgment in the gray matter of the dentist's nervous tissue, where it finds pabulum and consequently opportunities for growth, development, and for reproduction of its kind according to the laws of all living things. In the assimilation of this pabulum, and the metabolic changes which occur, atptomaine results which affects the habitat or gray tissue in which it is lodged, and the function of this important tissue is seriously interfered with—hallucinations are produced—things which before seemed right, now appear wrong; positions which before were considered honorable, now are regarded with contempt and abhorrence; such as dentists, or titles such as doctor of dental surgery—which, in the normal condition of the patient and before the effects of the micro-organism could be observed, were looked on as creditable, now cause wave-like shudders to pass throughout the muscle tissue of the entire organism, the emotional symptoms seeming to be a reflex nervous act, as from an opprobrious epithet applied to the patient, acting on the terminal of a sensitive nerve. These are a few of the more prominent and characteristic symptoms. This writer names the disease "M.D.-ism." Have you studied the disease, gentlemen? And if so, have you evolved from the depths of your therapeutic knowledge a method of treatment?

That it is desirable to cure a disease of this character, I think is evident to every one of us. Dentistry is a well-known, a reputable, and a distinct profession.

It has a history, a literature, and a special education of its own. We have, I sincerely believe, every reason to feel proud of each of these departments, and I have no sympathy with the false pride too prevalent now in our ranks, which makes a dentist or a dentist's wife and daughters and sons sneer at the profession or at the name of the profession which has made him and them what they are. There are too many scholars in our ranks, too many scientists in our midst for any man to feel ashamed to be ranked simply as a dentist. We have been lifted out of the mire by the efforts of noble men, whose example we want to emulate.—*The Ohio Journal.*

Exercise.

"THE Pleasure of Movement," is the title of a late work by a physician who praises exercise in the treatment of diseases. We extract some gems from it: "There is certainly a physical and moral pleasure that accompanies every movement of our bodies. The physical action enables us to get rid of pain, and the moral gives us the satisfaction derived from our fight against the natural forces." "Movements seem to please us the more they are in direct opposition to the laws of gravity. Indeed the dream of humanity seems to be to get rid of gravitation." "Movement, or active exercise, is the best of the anaesthetics; whenever we accomplish an energetic effort, as long as it lasts we are almost insensible to pain; when, for instance, we are immobile, a blow on the shoulder hurts us; but during the excitement of violent exercise (boxing, etc.), some of the hardest blows are not felt." "Movements procure a positive physical pleasure, as all the functions are accelerated, the heart beats faster, the respiration increases in frequency and depth, and we feel a sensation of good health; we live quicker, and are happy to do so; movement will then permit us to flee from pain, and it is also certain that muscular exercise is the best remedy for mental and moral troubles and annoyances."

A Narrow Escape From Sensure.

TWO weeks ago Miss H—— broke a partial set of upper teeth which she had worn for years, and came to my office to have the remaining teeth extracted for a full set, wishing an anesthetic, as she was extremely nervous, and feared she could not endure an operation without it. I advised her to have the plate repaired and retain the natural teeth, which could be made serviceable for years.

To this she finally consented and left the plate for repair, promising to call for it the next morning; she never came for it, however, for that very night she was stricken with paralysis and still lies at the point of death. Had I granted her request and administered an anesthetic the shock that so soon followed would certainly have been attributed to that cause.

W. H. COLGROVE, in *Practical Dentist.*

T. B. WELCH, M. D.

In my *Dental Office and Laboratory* I gather many ITEMS OF INTEREST, of which I take a *Dental Review* monthly, and many of the items I note in my *Dental Register* for future reference. Some of these may at times be seen in my celebrated *International Dental Journal*, and others again in my Journal which circulates throughout the entire Dental Cosmos. By adopting the above course I have been able to keep up with the "head-lights" of the dental profession. G. H. C.

PORTLAND, OREGON, November 15, 1889.

Certainly it is excellent discipline for an author to feel that he must say all he has to say in the fewest possible words, or his reader will certainly misunderstand them. Generally, also, a downright fact may be told in a plain way; and we want downright facts at present more than anything else.—*Ruskin.*

A Singular Case.

ABOUT three months ago a gentleman of fine muscular proportions called to consult me in regard to a neuralgic trouble of two years standing. His face bore every evidence of much suffering, tho healthy. He was twenty-two years old, and said he had suffered incessantly for the last two years—had consulted many physicians and dentists and had taken treatment of a specialist on nervous diseases in Chicago and found no relief, only as he got it by the use of opium and other strong narcotics, and that he was fast becoming a regular opium eater. He described his pain as being like an electric shock from the back part of the head to the front, usually the centre of the forehead, often over each eye and sometimes in the nose. And at each pulsation of the heart that pain would shoot forward like a shaft of lightning trying to drive through his forehead, and that unless he obtained relief soon he feared insanity or suicide, as life was a burden to him. I examined his teeth and found them perfect in every detail, only a little crowded, clean and sound and perfectly formed. I asked him: "How long is it since your wisdom teeth came?" He replied, "Two years." "Had you any of this pain before these teeth were cut?" He instantly said, "No." I then began to suspect pressure on the superior dental nerve, for they were upper wisdom teeth. He readily consented to their extraction. I at once removed the right one, when he said, "Hurry up and take out the other." I did so and he sprang out of the chair, exclaiming, "Thank God, you have saved my life. My pain is all gone. I feel as tho you had liberated a cord that ran though my head, and was stretched to the utmost tension." It was true, the young man was saved, was cured. After three months of the most complete freedom from the pain, he writes me that he is well and happy.

M. L. JACKSON.

Oskaloosa, Iowa.

"Women Dentists."

DR. S. G. COBB, ST. PAUL, MINN.

I cannot refrain from writing a few words in reply to Dr. Spencer's article in December ITEMS, page 541. I would ask what "man's work" is? Does man work from necessity always, or would you credit him with some "love" for his chosen work? If man can love that work, why may not woman? Intelligence and industry are the levers that move the world. Then why relegate to oblivion the brilliant thots that revolutionize habits, customs and even "men," because, forsooth, those thots were born in a woman's brain? The time has come when brain power, not physical power, must guide the helm of human destiny, and where the brightest intellect is, there will we look for the grandest achievements. Shall we kill that intellect, the grandest of God's gifts, because we find it inclosed within the cranium of a woman? Does it detract from their personal charms? Do women lose maternal instincts, or become less lovable, because they have been educated? Shall woman sit and wait for some "man" to marry her, that she may "fulfil her destiny" by cooking, scrubbing and pandering to his passions? Such sentiments belong to past generations of oppression and monarchy. If "women place too low an estimate on their labor," educate them to demand a more just compensation for that labor. True genius does not fear the competition of inferior development.

FROM GEO. H. SILVERS, D.D.S., WELLSVILLE, MO.

In the ITEMS OF INTEREST of September, 1889, you published a disparaging view of dentists of the past, by Dr. W. C. Barrett, in Kansas Dental Society. Now sir, I suppose from the tone of Dr. Barrett's article, he is not posted in regard to the standing and education of the dentists who stood fifty years ago, battling for the upbuilding of our noble profession. If dentistry was in its crude state it is no

reason why the dentists of that period should be classed as men who had failed in other pursuits, or as ignorant vagabonds! I will ask Dr. B., what will you say of Chapin A. Harris, of Baltimore, the founder of the first Dental College of the U. S., and of the *World* in 1838, and of the other noble progressive spirits associated with him? Who, I ask, is Dr. William H. Atkinson, of New York, who has just completed and celebrated his fiftieth year of dental practice? And who was Dr. Edward Hale, Dr. B. B. Brown, of Saint Louis, who practiced there from 1838 to 1849? And Hale to 1864, and Dr. Forbes of Saint Louis, practicing there from 1843 to 1880? And I may say Dr. H. I. B. McKellops, who commenced practice in Saint Louis in the spring of 1849? Who was Dr. Jayne, who practiced dentistry in Philadelphia and New Jersey from 1838 till his death? I might mention a host of others whom the writer of this article knew in 1835. I know all of these gentlemen were educated, and some of them were chemists and pharmacists, if dentistry was in its crude state. It took a good mechanic and an artist in those days to construct a full set of teeth on a gold plate. There were no text books, except Harris, and the student had to work out his own problems by careful study and perseverance. The appliances and instruments we had to work with in those days were crude, and many of those we had to forge and construct ourselves. We had no dental depots to supply our wants. The laboratories of our most skilled professional brethren were closed against us. We had very respectable porcelan teeth manufactured by Mr. Stockdon, of Philadelphia, the uncle or granduncle of S. S. White.

Since reading the article of Dr. Barrett, I have wondered how old the doctor is. I suppose at any rate he has seen General Washington. I agree with the doctor that there was empirics then as now, but the doctor must not so disparage the dentists of fifty years ago. Those who are left of us know better; and we know what difficulties we had to contend with, and the mud and slush we had to wade through. Even now it is difficult to sift the wheat from the chaff that the mills throw out. You say we ought to be guided by the experiences of the past and our best observations, rather than to hold on to each other's coat-tails. Now, if you will just say honor is due to the dentists of fifty years ago for laying the foundation of dental art and for building the structure we now enjoy, you will redeem yourself.

The article in the December ITEMS on "Woman Dentists" must have been written by a *patriarch*, tho he says he is a young man. What age does he think we live in. I am in favor of woman doing any business she can fit herself for, from law to the gospel. Who puts the low estimate on woman's labor? She does not. The clerk, the sewing girl, school teacher, and in fact every vocation woman has gone in, man gets twice the pay for the same work, and why is it so? As a young man in the profession I give woman the right hand of fellowship to dentistry and a "God speed on the untried waters." A glorious to-morrow to our old world when women shall fill all professions. Hail to its dawning.

R. R. VAUGHAN.

FROM JOHN M. HALE, MT. VERNON, IND.

In the December ITEMS OF INTEREST, Dr. W. R. Spencer, of West Point, Va., very severly criticises "Women Dentists." He says: "Now, it does seem to me the line ought to be drawn somewhere. It is only when a woman has made up her mind to relinquish all hope of home, and I am tempted to say of Heaven—all desire to lean on an arm which her Creator has made stronger than her own, that she seeks man's work." The Doctor certainly draws a close line.

Anything that is honest is honorable. If it is honest for me to engage in the practice of dentistry, it follows with unerring logic that it is equally so for my sister, if her mental equipments are equal.

The Doctor seems to think a lady must relinquish all hope of home and heaven to become willing to earn her own bread What, then, will he do with the many poor but deserving girls exposed to the cold charities of the world, who have no "strong arm" to lean on? Is it a shame for such to seek an honest livelihood? How a lady engaging in any honorable employment instantly loses her sweet charms, is beyond my comprehension. It is a noble and holy inspiration in our sisters to wish to meet for themselves the stern necessities of life.

The Doctor says he is a young man and unmarried. So am I a young man, Doctor, but married, and, were I to die now, I would not leave enough to support my wife many years. I hope to live long enough for my wife to be fully able to take my place in my office, and not be dependent on others when I shall have passed away. I dare say, she will lose none of her priceless virtues—which are so dear to me—by so doing.

The argument that lady dentists "cut prices" may be true. I know it is true of many dentists of our own sex; and you, Doctor, know it is true; but this is no argument against men becoming dentists. I am acquainted with a few lady dentists of consummate skill, who are far outstripping their professional brothers, but we must not get jealous. Not long ago a gentleman connected with the Phœnix Insurance Company, of Brooklyn, N. Y., came to have me examine his teeth. In his mouth I noticed several remarkably good fillings. On inquiry, I found they were the work of "a woman dentist" several years previous. I am confident they will stand for years hence as monuments to her skill. I would like to receive such compensation at all times for my services as she received for hers in that case.

Some of the "Women Dentists" in Indiana are far superior to some of those who desire to relegate them to the rear. The "Lords of Creation" have to be content with flatting their noses against the window panes and see the "Woman Dentist" competitors across the street busy. Why should she not practice dentistry when two-thirds of the dentist's patients are women and childen?

I admire the woman who will be independent and not beg. It lowers them in their estimation to have to be dependent on the mercies of others. I welcome women of high mental and moral capacities who desire to join us and hold up the high standard of our profession! Women, I conjecture your feelings when you desire to engage honorably with us, but find yourself not welcome. Your feelings are described by the delightful Portia, in the Merchant of Venice, when she said: "If to do were as easy as to know what were good to do, chapels had been churches and poor men's houses princes' palaces."

"Woman's Work in the Profession."

THIS subject is so interwoven with the general rights of woman, that it is almost impossible to discuss a single feature of it without going, somewhat, over the whole ground of the equality of human rights. It is only within the present century that the sphere of woman has been broadened beyond the boundary of domestic servitude. The prejudice against her has grown out of the fact that in the past, more than to-day, the "might makes right" system has prevailed among all the nations of the world. It will be assumed, then, that the work of woman in every department of life will be what she can do well, and likes to do.

In the dental profession, Dr. Robinson said, woman cannot be expected to be anxious to extract teeth; but the days of tooth extraction, like the exclusion of women from the useful arts and professions, are fast passing away. Tooth extraction and the major surgical operations she relegates to the men, as also the military and warlike responsibilities; but it does not follow that she is unable to perform all necessary operations on the teeth, because she is unable to endure the privations of camp-life, or carry a musket. The ruling class have always said to those who desire to elevate themselves in society: "You are not fit for the privilege

you ask;" in the dental profession to-day there is a sentiment that women are not fit to become dentists, and tho they are now admitted to our colleges, that other question is raised, "What work can she best fulfil in her calling?" The proper answer to that is: Whatever she wants to do, and can do well. Those who have employed women in their dental offices are unanimous in saying that they can get the confidence of children and exceedingly timid persons better than men; that they have a keener sense of the pain that is necessarily attendant in preparing cavities for filling; that the delicacy of their touch mitigates that inexpressible sensation that is so hard to be endured while using the excavator and engine; and, likewise, she has a gentleness of blow while using the mallet that some men never acquire.

It is as difficult to define any rule of labor in dentistry, or any other industry, as it is to say to man, you must do this or that to support yourself and get a living. Every individual should be allowed the largest liberty in selecting their calling, so long as they do not disobey wholesome laws. Women certainly have more patience with women. So, if she can save the teeth of those poor nervous sisters, who would rather lose them than sit for two hours under a man's hand, she certainly has a place in the profession. Woman can have mechanical ability, and must have to make a success of her work. The majority of women may not have an excess of that necessary quality, because it has not been brought into exercise, but the majority of women would not be dentists, if they could. But, do give those the opportunity that have the ability. Let me say in conclusion, with Wendell Phillips, "Welcome me, henceforth, brother, to your arena, and let facts, not theories, settle my capacity and therefore my sphere."—*Archives.*

Women as Dentists in Perfect Propriety.—Woman can accomplish good work, and I have observed they are always above men in their classes. This is accounted for in that she is self-reliant. Women know they will meet opposition, and prepare for it; they determine to succeed. Many men are not first-class in every respect: it is a common opinion that it is easy to prepare for dentistry, and so these men who know they are not fitted for something else, enter the study of dentistry, expecting but little work and talent will be required: Women do not think so, and for that reason are eminently successful. Women go immediately into good positions, and will be a means of elevating the profession.—*Dr. J. Taft.*

Treatment of Teeth Preliminary to Filling.

Several times lately we have removed oxychloride and oxyphosphate fillings from the labial and buccal surfaces of teeth for the purpose of replacing them with gold, porcelain inlays, etc. In most, if not all of the cases, we have noticed the general hardness of the margins of the cavities and the walls as well. In many of the cavities the primary object in filling was to protect the teeth till a favorable opportunity for more durable filling. Teeth so treated appear to be benefited by this kind of preliminary treatment, even better than when gutta-percha is used as the temporary filling.

Cement fillings are not disturbed in the act of brushing. They are harder, and if properly protected till solidified, they do not leak. Gutta-percha on the contrary, if unskillfully handed, or if it is overheated, or is not properly packed till it is cold, does not so well and thoroughly fill the cavity as an oxychloride or other cement filling. The tooth does not appear to be so sensitive after a few month's wear of a cement filling as it is when gutta-percha is improperly used.

If more teeth were treated in this manner preliminary to permanent filling the dentist would get better results, and his client would be better served. Try it and report.—*Editorial in Dental Review.*

The Longest Tooth.

A Larger Tooth.—About five years ago I was practicing in the town of Colfax, W. T. One day a tall, cadaverous-looking man came into my office to have several teeth extracted. After removing two or three, I tackled the right upper cuspid, and after some little difficulty it gave away. I thot I had pulled the whole jaw off, for a large piece of process and the first bicuspid came with it. This bicuspid is one and seven-sixteenth inches long and one and one-sixteenth inches in circumference. DR. A. BOSTON.

Wallace, Idaho Ter.

BELOIT, WIS., Nov. 22, 1889.

ITEMS OF INTEREST, T. B. WELCH, M. D., ED.:

DEAR SIR:—In November ITEMS, page 514, Dr. C. A. Thatcher asks, "Has any one extracted a larger tooth?"

I say yes! I have one that I drew from a lad sixteen years old, left superior cuspid, that is one and five-sixteenth inches long, and, in circumference, one inch and an eighth. So Dr. T. must "*pull another tooth.*" E. N. CLARK, M. D.

Last June I extracted seven superior teeth for a lady. I found four very difficult to remove, viz.: two canines and two first bicuspids. One canine is *one and five-sixteenth inches long*, and fifteen-sixteenths of an inch in circumference. The bicuspids were *bayonet* shaped. One is one and one-sixteenth inches long, and one inch in circumference. The lady weighs about one hundred and twenty pounds.

GEO. I. KEMER.

Morgantown, W. Va.

About three weeks ago I extracted six teeth for a lady, among which were two upper cuspids, both largely decayed. The larger of the two measures one inch and five-sixteenths in length, and almost one inch in circumference. The smaller is one and a quarter inches long by fifteen-sixteenths of an inch circumference. I preserved these monsters and have them in my possession. Next!

Leechburg, Pa. GEORGE A. SLOAN.

I will say that I have an upper cuspid—which I extracted about three years ago for a young man—that is one and three-eighths inches in length and one and one-eighth in circumference. The man is short and rather thick set, would weigh, I should say, about 160 pounds. F. E. WELLS.

Waltham, Mass.

T. B. WELCH, M. D.:—I have just measured two cuspids taken from the same mouth. Each one measures *one and three-eighths inches long and one is over fifteen-sixteenths of an inch in circumference;* the other slightly smaller. Next!

Respectfully,

Mt. Union, O. W. P. RICE.

I find the ITEMS quite a companionable paper.

Woodland, Cal. A. N. DICK.

Cure for Insomnia.—A Swedish servant maid, finding that her mistress was troubled with sleeplessness, told her of a practice of the people in her country who were similarly affected. It was to take a napkin, dip it in ice-cold water, wring it slightly, and lay it across her eyes. The plan was followed, and it worked like a charm. The first night the lady slept four hours without waking, something she had not done before for several months. At the end of that time the napkin had become dry. By wetting it again she at once went to sleep, and it required considerable force to rouse her in the morning.—*St. Louis Christian Advocate.*

For Our Patients.

Sprouting a Tooth.

(An Actual Occurrence.)

DR. JULIUS DIENELT.

'TWAS in the year of eighteen sixty-one ;
The year in which the cruel war begun,
That troops were marching onward to the South,
Intent at once "to clean the rebels out."
In solid column, marching day and night,
They crossed the border, eager for the fight ;
But their commander rightly deemed it best,
To give his men a little needed rest.

The tents were pitched, intrenchments thrown about,
Should there be need, to keep the rebels out ;
Who, tho' encamped some distance to the right,
Were there in force and constantly in sight.
An ounce prevention, we are told for sure,
By far outweighs a solid pound of cure.
But to the point ; what we intend to tell,
Might have been said in fewer words as well.

Boys will be boys, no matter, young or old ;
They'll play their pranks, not minding heat or cold.
When time hangs heavy, joyful sport and play
Will oft cut short the longest, darkest day.
Thus thought a squad of Pennsylvania boys
Who lay in camp, and in default of toys,
Tossed sticks and stones in friendly game of ball,
Till one of them was made in to fall.

A flying stick struck one of them, forsooth,
And broke in twain a sound incisor tooth ;
Great was the consternation, great the pain,
But here, as oft, regrets were all in vain.
The surgeon of the post, a man inclined to jest,
Was sought at once, to do what he thought best ;
But not prepared to render proper aid,
He meditated, and at last he said :

"Go to a dentist who, with proper skill,
May soon repair the damage, if he will ;"
Then whispered something in the soldier's ear,
Which at the proper moment we shall hear.
The captain having kindly granted leave
For seeking aid, the damage to retrieve,
The soldier, with a comrade, went to town,
To find a man to mend his broken crown.

The dentist found, the case was diagnosed,
And soon a proper remedy proposed :
The root being sound, a crown with porcelain face,
Backed down with gold, held by a pin in place,
Seemed just the thing ; and so the dentist told,
But in reply our soldier-boy made bold :
"I want no crown, nor do I want it out ;
Our surgeon said, that you could make it sprout."

Care of Children's Teeth.

BY DR. G. B. DILLON, STERLING, ILL.

THE first thing in the care of children's teeth is a proper regard for their cleanliness.

This must be impressed not only on the children, but on the parents as well.

Children generally come to us only to be relieved of immediate pain, and when we have done that, want no more of us till they need relief again.

To relieve this pain and fill immediately is hardly to be thought of, but if we allay the pain and stop the cavity lightly by cotton, covered with shellac or chloropercha, we have made the tooth comfortable and laid the foundation of future work.

In preparing a sensitive cavity for a child, I cut away gently, but quickly, so much of the dentine as is necessary to retain a filling. Dry the cavity with cotton and warm air, cover with a light coat of carbolized resin, then over this place a small disc of gutta-percha. If the pulp is nearly, or quite exposed, cut out the center of disc, put in a drop of chloro-percha and place a second disc over all.

The cavity may now be filled, or remain weeks on trial, and in the meantime the smaller cavities should be filled.

There is no use, when a child comes to us with one or two aching teeth, to fill or treat them and let the others go. In that way we are almost sure to lose the patient and he lose the teeth.

We need not deceive the parent or child, but explain to them the necessity of doing it thoroughly, and of doing it while treating the larger and more sensitive cavities. In this way we can control our patient and have a chance to watch the teeth for a while at least. We may sometimes lose a patient this way, but not often, and it is the best time, if he must be lost at all.

Amalgam is, in my judgment, the best filling for all the deciduous teeth, also for the first permanent molars, when they have to be filled at an early age, say under ten years.

At the age of about six years there appears in a child's mouth that useful but much abused tooth, the first permanent molar, and it generally comes into very bad company. All the other teeth are undergoing a process of absorption, and many of them, perhaps, of decay, so that the first thing this tooth touches, even before it sees the light of day, is a conglomerate mass of meat, bread and vegetables in an advanced state of putrefaction and swarming with bugs (holding high carnival), in a posterior cavity of the temporary molar.

Against this mass of decomposing animal matter the tooth is held for weeks, months and years unless sooner destroyed, and when the pain is no longer bearable, the child is brought to the dentist, and the parent is horrified to find that this this is a "second" tooth.

It is then part of the care of children's teeth to show them and their parents these dangers. When you have occasion to extract a deciduous second molar the sixth year molar should be examined thoroughly, and if there are any cavities they can be much better filled, especially if on the anterior surface before the second bicuspid takes its place.

These teeth are worth all the care and attention we can give them and deserve our best efforts, and so long as there is any hope of saving them with living, healthy pulps, I would use every means to do so. But I do not think it best to cap the pulps of these teeth. I am almost sure it is not best to devitalize the pulp and fill it at so early an age. By this means the tooth may be retained for a while, but it will be lost just at the time it is most needed, and when it is too late to bring a second molar into its place. Except in rare cases its loss will not be felt if extracted early, and the second and third molars will come forward without tilting and fill the space and do better and longer service than the three would do even could they all be retained.

If we keep a child's teeth clean and the cavities all filled till he is ten years of age, and have taught him to clean them properly and keep them so—we have contributed largely to his future happiness—we deserve, and I believe will receive, his respect and patronage.—*Dent. Review.*

Better than Faith Cure.

There were five men of us and three women, besides the driver, who were staging it between two towns in Kansas. We set out at 7 o'clock in the morning for an all-day's ride, and had not made over two miles when the oldest man in the crowd, who was from the Nutmeg State, and built on Yankee principles, suddenly exclaimed:

"By gosh to squash!"

"What's up? asked she of the lot.

"The toothache! She's hit me in that 'ere lower double tooth, and I'm in for a bushel of trouble."

"Just try and not think of it," suggested one of the women. "Keep your thoughts on your family."

He tried it for two or three minutes, and a smile of affection came to his face. It suddenly died away, however, to be replaced by a look of ferocity as he yelled out:

"Hang my family, but it won't work! Has anybody got any camphor?

Nobody had. We hadn't even a drop of whiskey. One man had some tobacco, but the Yankee couldn't go it. The ache, once started, grew worse, and as he began groaning a second woman suggested:

"I've heard say as imagination has all to do with pains. Suppose you imagine you are sound asleep and dreaming of angels and such."

He tried it, and for a minute or two the ache let up. Then it struck him with a jump, and he seized his jaw and yelled:

"Jerusha Jackson! but I'll be gaul durned if I hain't goin' to die right here! Driver stop the wagon!"

It was stopped and he wanted to know how far it was to a town. He was told that it was twenty miles and he fetched a groan a rod long and said:

"It's got to be done! Driver, come down here!"

"What do you want?"

"You've got to knock it out! You are the biggest man in the lot, and I guess you kin hit a purty fair blow. Give me a lifter right here on the jaw."

"Do you mean it?"

"Sartain, and don't waste any more time. Spit on yer hand, haul off, and sock me one right on that tooth. I want it knocked into a cocked hat."

"But you will go with it."

"Can't help that. Now, imagine that I've called you a double-barreled liar, and whale away,"

The driver drew back and then landed on the exact spot, and the Yankee tumbled head over heels in the grasss. He was up in a minute, however, and he put his thumb and finger into his mouth and pulled out two teeth and shouted:

"Whoop! It's one extra, but that's all right! Shake, old man, and then drive on with the band wagon! We—whoop! Toothache gone—pain gone—happiness come to stay! Here's a dollar, and if you want to brag around about knocking a feller fourteen feet, I won't say a word."

Five Incisors.—Miss B——, aged eighteen, has a full, well-shaped jaw, and all upper and lower teeth nowise crowded. What is peculiar is she has five well-shaped, permanent incisors in perfect position. Each is so well developed and regular I have been unable to make up my mind which is the supernumrary. Are there many such cases on record?

J. H. REED,
Chelsea, Mass.

Editorial.

Our New Departure.

FROM the first it has been our aim to give our readers a clear, practical and interesting compendium of current dental literature. But we have been crampt for room. Much of great value has been necessarily excluded. To meet this defect, we begin with this issue to publish

THE LARGEST DENTAL JOURNAL IN THE WORLD.

Not the largest in the amount of paper, there is nothing added to make it bulky, we use no more than heretofore; and it is not the largest because we want to publish wordy and unimportant reports, or exhaustive and exhausting essays on technical and speculative subjects; we shall be as concise and practical as heretofore, and try harder than ever to give a perfect reflection of the advancing strides of the Dental Profession. The increase is by enlarging the page and the change of tpye.

By the enlargement of our pages and the use of the new-faced, clear and beautiful type of our present number, we give in forty-eight pages what is equivalent to eighty-three pages of our former issue—an amount greater than any other dental journal published.

We are confident, too, our readers will be pleased with its contents. By our past experience and our present facilities, we shall make the ITEMS OF INTEREST a praiseworthy journal.

And all this is without adding to the price of subscription. Let this increase of expense of editing and publishing be met by corresponding increase in our patronage. A dollar is a small subscription price, but a multitude of these dollars will pay all expenses.

Happy New Year To You!

HERE we are in another new year. So the old years go out and the new years come in; and each, as we grow older, seems shorter than its predecessor. Also, the busier we are, and the more harmonious, prosperous and happy our lives, the shorter the years seem. Trouble makes a long night; disaster, strife and unrequited toil, a long year.

Now let us live this year with a definite purpose,—a definite purpose for growth in skill, knowledge, and breadth of intelligence; for our betterment in social standing, favorable surroundings, and financial improvement; for greater usefulness, keener sympathies, and deeper experiences in all that elevates, ennobles, refines and purifies the life.

Women Graduates of The Pennsylvania Dental College.—There seems to be considerable difference of opinion among the Universities of our country in regard to co-education. "How do you find the experiment to work in your school?" we asked of Dr. Warren. "Well, there have been many sentimental objections made to co-education, and like many other things in life, it has its advantages and its disadvantages. Success in co-education largely depends on the character and intelligence of the woman who enter the colleges. In our school it certainly is a success. We have been fortunate in having young women of intelligence and of strong character, tho I must say there is occasionally one who had better have stayed under home influences, and prepared herself for the care of a home of her own, rather than enter a profession; yet we have young men who had better stayed in the blacksmith shop or behind the plow, and others who have been spoiled by home indulgences and bad morals. We think the broadest chance to obtain a higher education should be just as freely open to women as to men, and that they should have the most generous encouragement."

Prof. A. O. Hunt, and the Dental Department of State University of Iowa.

(See Frontispiece.)

PROF. A. O. HUNT, Dean of the Dental Department of the University of Iowa, is an eminent Dentist and scholar. He was born in Utica, N.Y., February 27, 1844, where his early life and school-days were spent; receiving his education in the public schools and free academy till the fall of 1861. His introduction to dentistry was gradual, but he commenced practice in October, 1863, in McGregor, Iowa, with his brother, Dr. C. H. Hunt. He remained in this place till September, 1882, when he accepted a position in the State University of Iowa and removed to Iowa City. In the first session of the Department he was both pupil and teacher, receiving his degree of D. D. S. from the University at the following Commencement. On coming into Iowa he identified himself at once with the Dental profession of the State and has been an active member of its State Society for many years; was a member of the committee appointed by this society to secure the establishment of the Dental Department in the University. This committee and another which had been appointed the same year to obtain a Dental Law have worked together. For two years he was President of the National Association of Dental Faculties; and during many years has been prominent in the State and National Associations. He is now Dean of the Dental Department of the Iowa University.

The Dental Department of this institution was established by the Board of Regents in June, 1882. Mr. Hunt was appointed the Professor of Dental Chemistry, Mechanism and Art, Secretary and Executive Officer of the Faculty at this time; which position he held till the reorganization of the Faculty in September, 1888, when he was made Dean of the reorganized Faculty. The management of this Department has always been placed in his charge. The Department opened its first session of 1882-1883 with fourteen students: in the session of 1883-1884 there were thirty-one students; in 1884-1885, thirty-six; in 1885-1886, forty-eight; in 1886-1887, fifty-six; in 1887-1888, fifty-three; in 1888-1889, eighty; in 1889-1890 there are one hundred and eighteen. At the present session, the accommodations have not been sufficient for the large number applying for admission. They have been forced to refuse ten applicants on account of this. Its growth has been flattering and its graduates with hardly an exception are sustaining themselves in a good practice. Following the session of 1888-1889, a Spring and a Practitioner's Course were established. Both are extremely successful. The policy of this Department has been entirely in the line of elevating the standard of Dental Education as well as the requirements for admission. At its next session (1890-1891) there will be required a three years' course of instruction preparatory to the graduation of dental students

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Dr. Bonwill and His Typo.—All who know Dr. Bonwill have been struck with the fastidiousness of his address in conversation; but in print he is made to say in a very carefully prepared address to his professional friends and patrons: "I had some vice baited plainly, with as little swearing as possible." Of course, all were horrified till they learned that his manuscript said: "I had some rice boiled plainly, with as little sugar as possible." He went to Europe while this typo was preparing his address. Was it of him whom the parson shows an equal solicitude for the doctor's morals when he gives notice: "Our clerk having gone to see his wife, asks the prayers of the congregation."

The Chase Metallic Combination Plate promises to become popular. When such a successful mechanical dentist as Dr. L. P. Haskell, of Chicago, endorses it, her dentists need not be afraid to take hold of it.

How is Food Transformed into Living Tissue.—No. 2.

ASSIMILATION is the second process of the transformation of food into living tissue. This is accomplished by the vessels and glands called lacteals and lymphatics. They are seen pricipally on the surface and in the coating and throughout the substances of the small intestines, and in the anastomosing net-work of the mesenteric membrane (vessels and glands outside of the small intestines). These pass the chyme, here transformed into plasma, on to the venous blood, as this is bound for the thoracic duct. On the inner surface of all the small intestine—the duodenum, the jejunum and the ilium (the minute lacteal vessels) are found as the soft villi of velvet, with their mouths wide open, drinking in the chyle as it forms from the chyme received from the stomach, and passing it through the walls of the intestine into the mesentery. Here it is clarified and transformed into a beautiful lymph, and brought in contact with venous blood, when it instantly receives vitality. As the two are mixt, assimilation and vitality and actual growth into living substance of this plasma goes on continually. From a milk-like fluid it is gradually changed into dark-red blood, and sent through the thoracic duct to the heart. From the heart it is sent to the lungs, and returned thoroughly vitalized, purified, oxygenized and organized. It is now arterial blood, and is sent throughout the body to build up and maintain structure, life and function.

The lymphatic or absorbent system is not confined to the intestines and mesentery. They are seen as white, delicate rootlets all over the body, continually sucking up the juices of the flesh. As the blood deposits in their proper places the materials which build up the body, these absorbents take up all waste matter and pass it back through the various purifying organs for expulsion. Great vigilance is required of them; for, if the smallest particle of effete or worn-out matter is not removed at the proper time, it becomes the nucleus of disease.

The third system involved in the transformation of food into living organism is the vascular system. The first lecture that I attended at a dental college was on this subject. It was made very impressive by comparing the circulation of the blood to the vital process in the vegetable kingdom. The tree sends out its little rootlets to take up food and drink from the earth. Their little mouths are always open, eating and drinking, and sending up through the roots to the trunk just such materials and juices as are required by the tree. How is it possible for the sap, ladened with its heavy materials, to pass with such facility up the trunk to every limb and branch and leaf? There seems to be a force behind to push it on, and a force in front to draw in on, and a force in itself and its surroundings; and these seem to possess each an intelligence of its own. Every various kind of particle seems to know where to go, and all appear to know the exact proportion of each that should be marshalled to give strength and kind and endurance to each part. The first thought of the superficial observer, is that the only force producing tree circulation is the absorbent quality of heat and air on the leaf, making a vacuum which the fluid behind the leaf must fill. Yes, here is a fact—but there is another—the fluid as it comes to the leaf is changed and sent back to give greater vitality to the tree. And another fact: There is a force that impels the fluids, with their precious freight, forward from the root. What is it? And these facts apply to the circulation of the body, and the actions of our absorbents. As the heat and air draw away the fluids of the tree, so in absorbents in our body take up its fluids and cause more blood to rush in to supply their place. But this does not explain the whole phenomena of feeding, circulation and nutrition in either our body orin the tree. In both, the circulation is a phenomena of life and functions that are mysterious. Yet these processes are governed by inflexible laws, but these laws are the will of a mighty Intelligence beyond our comprehension. They are all the product of "affinity," of "juxtaposition of particles," and of "the survival of the

fittest," but all this in the hands of the Father who holds everything in His hand and moves everything at His will, and proposes and perfects everything at His pleasure.

An Unintentional False Statement.

THE *Practical Dentist* is a lively journal, and we believe its editor is a conscientious man. But even conscientious men sometimes make false statements; but the glory of such men is that when they find they have made a mistake, they speedily retract it, especially if it injures others.

Last September, Gideon Sibley, and the Wilmington Dental Manufacturing Company, made a small advance in the price of their teeth. The reason they assigned was that platina had so frequently and largely advanced since they commenced to manufacture, that they were compelled to make some advance in the price of teeth. The editor of THE PRACTICAL DENTIST says such a reason must be mere subterfuge, as platina had only advanced $2.00 a pound, which is too inconsiderable to make much difference in the cost of artificial teeth.

Now if this gentleman will examine this rise of platina a little more carefully, he will find that, since the price of these teeth was fixed up, to Sept. 1st, 1889, the wholesale price of platina had advanced *over 80 per cent;* and since the first of September, when the announcement of the advance in price of teeth was made, there has been another rise of nearly 20 per cent on the quotations of that date; or an actual increase of over 100 per cent.; on the original price, instead of but about three per cent., as would be an advance of $2.00 per pound. As for the future of the platina market there is every indication of continued and indefinite rise, as no new sources of supply are developing, while the demand is increasing at a marvelous rate.

Against this extraordinary advance in raw materials of over one hundred per cent, the manufacturers have made an advance of but twelve per cent in a set of plain teeth, and but twenty-five in gum teeth. If our friend still holds to his statement perhaps he will be willing to contract to furnish the necessary supply for Mr. Sibley and the Wilmington Dental Mfg. Co., on this basis. They would be perfectly willing to give him employment as their purchasing agent, and guarantee him a salary far beyond what his present occupation affords him.

As an honest man, he does not attempt to disparage our teeth; he knows their qualities are equal to the best. Will he not therefore generously retract his unintentional false statement, and the false motive he has ascribed to us, and show a spirit of fairness.

J. F. FRANTZ, President,
The Wilmington Dental Mfg. Co.

Dr. C. S. Stockton, one of the most prominent and successful dentists of New Jersey, says he has never met with anything so desirable for under-plates as the electro-deposit. The fit must, of course, be perfect, easy and stable. See a full description of them in the Publisher's Department. We have never known Dr. Stockton to lend his name to any but the most worthy objects. His name is proverbial for weight and worth.

Some one sends us *The Dental Journal*, of Woodland, Cal. It is a spicy sheet, if bad grammar and worse taste are the criterions.

The response to our suggestion that subscriptions be sent in early is gratifying. It will save us much labor. Will others please respond promptly? From present prospects, our list will be much larger than even last year. Not only are old subscribers showing their appreciation of our effort to give them practical items of interest, but new subscriptions are fairly loading the mails. Well, this will make us more than ever determined to interest and instruct our readers.

Miscellaneous.

Left-Leggedness.

A paper on "Left-leggedness" was read before the British Association by Dr. W. K. Sibley, who said that Professor Ball in "Le Dualisme Cerebral" speaks of man as a right-handed animal. Being right-handed, it is popularly assumed that he is also right-legged, but this does not appear to be the case. Standing working with the right hand, there is a tendency to use the left leg for balance. Many people find less exertion in going round circles to the right than in circles to the left. Race paths are nearly always made for running in circles to the right. So the majority of movements are more readily performed to the right, as dancing, running, etc.

The rule in walking is to keep to the right, and this appears to be almost universal. It is more natural to bear to the right. Of a large number of people from the better educated classes asked about the existence of the rule, only 67 per cent. males and 53 per cent. females were aware of the rule. The large majority obey it unconsciously in walking. Crowds tend to bear to the right. The left leg being the stronger, it is more readily brought into action. Hence troops start off with the left foot. It is the foot which is placed into the stirrup of the saddle or step of bicycle in mounting. So the left is the foot which a man takes off from in jumping.

In the experiments of Mr. G. H. Darwin, blindfolding boys and telling them to walk straight, the right-handed one diverged to the right, and *vice versa*. From measurements of Dr. Garson of the skeletons of the two legs, in 54.3 per cent the left was the longer, and 35.8 the right. For measurements of the feet, the author collected the drawings and measurements of two hundred pairs, with the result that in 44 per cent. the left was longer, in 21.5 per cent the right, and in 34.5 per cent. they were the same size. Measurement at the first joint gave 56 per cent left larger, and at the instep 42.5 per cent. From the table of the figures it is observed that the left foot is more frequently the larger in the male than female sex, and the percentage of feet of the same size is greater in the female. The percentage of the right larger than the left is very constant, whereas the numbers of the left larger and those in which both feet were the same size are much more variable. Man, being naturally or artificially right handed and left-legged, tends unconsciously to bear to the right; lower animals, on the other hand, appear nearly always to circle to the left.—*Sc. American.*

One of Herschel's Problems.

IN her "Reminiscenses of the Herschels," in the *Century Magazine*, the late Prof. Maria Mitchell says: "One of Sir John Herschel's numerical problems was this: If, at the time of Cheops, or three thousand years ago, one pair of human beings had lived, and war, pestilence, and famine had not existed, and only natural death came to man, and this pair had doubled once in thirty years, and their children had doubled, and so on, how large would the population of the world be at this time—could they stand upon the earth as a plane?

"We were sitting at the breakfast table when he asked the question. We thought they could not. 'But if they stood closely and others stood on their shoulders, man, woman, and child, how many layers would there be?' I said, 'Perhaps three.' 'How many feet of men?' he asked. 'Possibly thirty,' I said, 'Oh, more!' 'Well, we'll say a hundred.' 'Oh, more!' Miss Herschel said. 'Enough to reach the moon.' 'To the sun.' 'More, more!' cried Sir John, exulting in our astonishment; 'bid higher.' 'To Neptune,' said one. 'Now you burn,' he replied. '*Take a hundred times the distance of Neptune, and it is very near.* That is my way,' said he, 'of whitewashing war, pestilence, and famine.'"

The Form of a Drop.—We are accustomed to see substances of all kinds, each in some peculiar and characteristic shape or form, and we recognize them all by their—in fact, we know them as we know persons—by their features. Throughout all substances there is some one general feature peculiar to each class, no less than an individual character to each subdivision of its class, by which we can identify and individualize them. Thus there is a general form of coal, by which it is recognized as coal, and an individual form by which each kind is known from other varities. No two pieces of chalk flint are alike; yet all flints have a form by which they are known from other stones. There is a gray granite and red granite; but no one will mistake granite for Portland stone.

All metals have a general metallic lustre; but though one may be heavy and yellow, as in gold, and another lighter than water, and white, as in potassium, we still know them as metals. The stars, whether fixed stars or planets, have all the same globular form; yet, when minutely examined, there is not much difficulty to identify each individual star. Thus, by its generic outward form, and its own individual character exhibited in its various parts, everything may be recognized as readily as a shepherd knows each individual sheep of his flock.

Without examination, of a close and careful character, we are apt to assume that a drop of any known fluid has one form. It is round; and whether it be a drop of oil, a drop of water, a drop of ether, or any other of the innumerable fluids which are known, they all appear to be round. Now, however, comes the ingenious discovery of Professor Tomlinson, of King's College, London, to bear upon the subject. He finds, if we do but examine a drop of any known liquid under certain conditions, that fluid drops assume each a form peculiar to its own kind of liquid, by which it may be known and identified. A drop of otto of lavender puts on one shape, a drop of turpentine another. Drops of sperm oil, olive oil, colza oil, naphtha, creosote—indeed, each individual drop, be the fluid what it may—can be easily recognized by its form. In order to test any of these forms or shapes, we have but to place a drop of the fluid under examination upon water. For this purpose we must employ a glass to hold the water, taking the greatest care that it is quite clean; it must even be rinsed after being wiped, lest there be the least fluff from the cloth adhering to the vessel. The glass being then filled with distilled or clean filtered river water, we let fall upon it a drop of the fluid, and watch the shape or form it puts on. A very little practice will show how easy it is thus to distinguish a drop of one fluid from that of another. Even more; if one fluid be mixed with another, for any sinister motive or design, we can thus detect the mixture, because we can see each fluid in one drop of the mixture. Thus, by the examination of one drop of sperm oil adulterated with one-twentieth of colza oil, the mixture is instantly discovered. So, if turpentine be mixed with otto of lemons, or otto of lavender, we have now a ready mode of discovering the cheat.

How useful may not this knowledge become to manufacturers and others, now that we are enabled to recognize the individuality of each fluid from one single drop! —*Scientific American.* SEPTIMUS PIESSE.

Lives on Bread and Milk.

EXTRACT from a Camden, Me., letter in the *Boston Globe:* "You never will find in all your travels a character more unique or interesting than the subject of this sketch, Dr. Isaac Bartlett, of Hope, Me. * * * Here is a man who has nearly lived his three-score years and ten, a medical doctor, too, on one particular diet, namely, bread and milk, not perhaps from any particular virtue in his own right, but, more properly speaking, because he was born with a liking for bread and milk, and a taste, or appetite, with slight exceptions, for no other kind of food than a man who has never eaten an ounce of meat in all his life, who has never taken a teaspoonful of intoxicating liquors of any kind, who has never used tobacco, tea or coffee, except in the case of coffee once or twice, but very weak, and a man, too, who is hale and hearty, bright and active for a man of his age, and who tips the beam at 240 pounds."

Wheat Bread.—There is no doubt in my mind that it is a great mistake to refine wheat until all the phosphates are removed from it. I believe there are four or five capsules or coverings of the wheat berry, and in ruling them out in the manufacture of flour we rule out a very important element of the wheat, to wit, the phosphates. My stomach rebels every time I eat wheat flour bread, and when I return to the whole-grain flour I have no trouble. I have made this subject of phosphates a very prominent one, and am delighted to know that the medical fraternity are paying more attention to it now than they have heretofore. I have in my possession some phosphate of lime prepared by Parke & Davis, I think, of Detroit, and my patients are using it very generally, uniting it with their food and keeping it on the table, and I am satisfied that they and their teeth are thriving under it. Phosphates have always been recognized as a tonic medicine for building up waste tissue and giving tone and vigor to the nervous system. I hope we shall pay more attention to this subject than we have heretofore done. It interests us as a profession more than any other. Our teeth are largely made up of carbonates and phosphates, the enamel almost exclusively so.—*Dr. Dwinelle.*